# FLORIDA WILDLIFE®

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Volume 46, Number 2

March-April 1992

# Don't Teach Your Trash to Swim!

## It's the Law

It is illegal for any vessel to dump plastic trash anywhere in the ocean or navigable waters of the United States. Annex V of the MARPOL TREATY is a new international law for a cleaner, safer marine environment. Violation of these requirements may result in civil penalty up to $25,000 and imprisonment.

- In U.S. lakes, rivers, bays, sounds and three miles from shore it is illegal to dump: plastic, paper, rags, glass, metal, crockery, dunnage and food.

- Three to 12 miles from shore it is illegal to dump: plastic. It is also illegal to dump (if not ground to 1 inch): paper, rags, glass, metal, crockery, dunnage and food.

- Twelve to 25 miles it is illegal to dump: plastic and dunnage.

- Outside 25 miles it is illegal to dump: plastic.

**Working together we can all make a difference!**

**Organized Fishermen of Florida**

# FLORIDA WILDLIFE®

Volume 46, Number 2

March-April 1992

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Publisher

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*One of a handful of rivers in the northern hemisphere to flow from south to north, Florida's St. Johns is the topic of three articles in this issue, beginning on page 9.*

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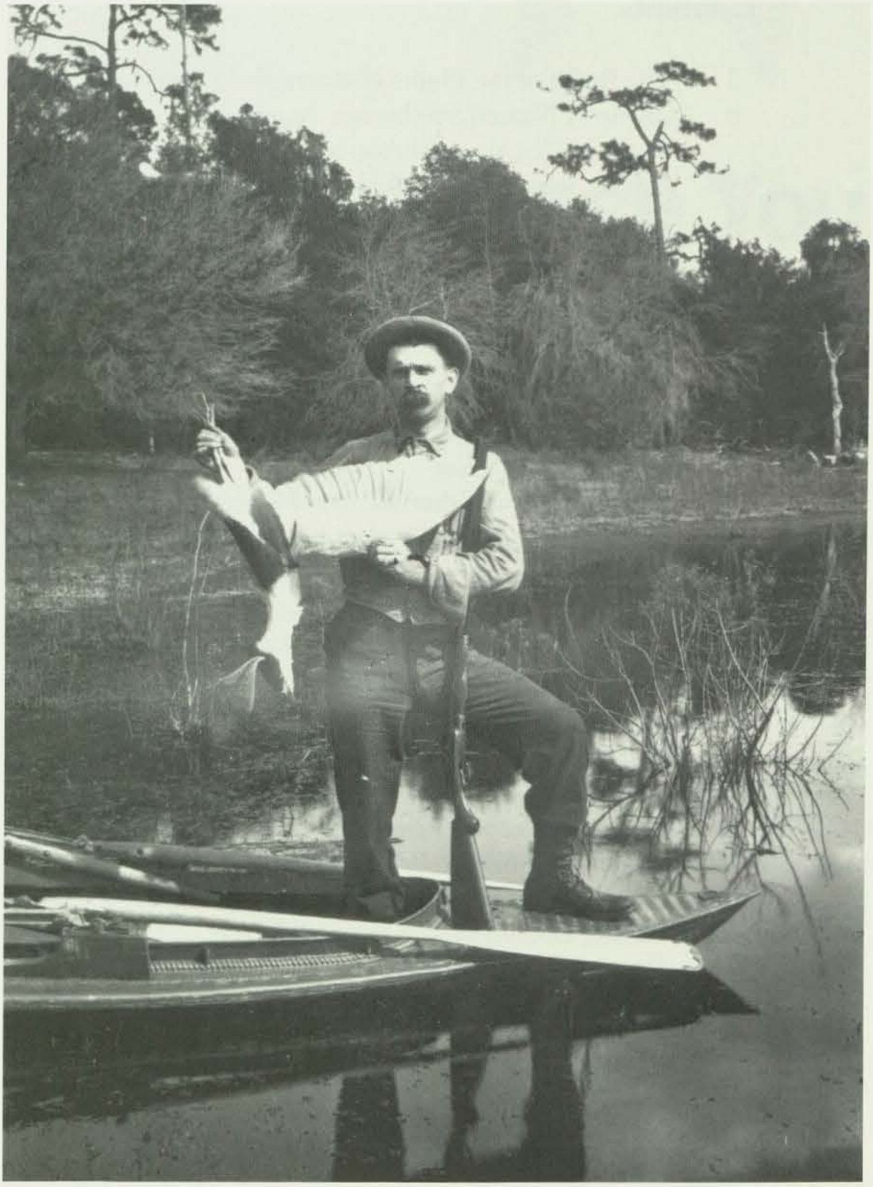
## Covers

While an angler caught the bass with rod and reel, photographer Doug Stamm caught it on film for our front cover as it exploded from the water. A tiny speck of a moon hangs above the St. Johns River as photographed by James Valentine for the back cover.

# The Reign of the Plume Hunters

By Lt. Jim Huffstodt

**The commercial plume hunters were a different breed of hunter. They killed for money and threatened to wipe out every wading bird in Florida at the turn of the century.**



PHOTOGRAPHS COURTESY OF FLORIDA STATE ARCHIVES

Feathers, literally worth their weight in gold, lured turn-of-the-century plume hunters to the deepest recesses of the Everglades. The commercial hunters gunned down millions of wading birds for their plumage to decorate ladies' hats. Entire rookeries were blasted out of existence.

How many wading birds were sacrificed for fashion? Mark Derr, in his book, "Some Kind Of Paradise," pointed to claims that more than one million wading birds were shot over a 20-year period just in the headwaters of Shark River Slough in the Everglades.

"White ibis, roseate spoonbills, pelicans, and herons and egrets of every hue and size were gone," Derr wrote. "Many hunters thought survivors had fled to rookeries inland or farther south; they couldn't conceive that the birds would not come back...So thorough was the destruction of plume birds that within several generations collective memory of the rookeries was as dead as the birds themselves."

The hunters plucked tail feathers, or "aigrettes," from the dead birds and left the corpses to rot. Ornithologist William Hornaday deplored the mass killing. In a 1913 article for the New York Zoological Society, he claimed that plume hunters had killed 71 percent of the Florida wading bird population between 1881 and 1898.

The plume hunters came to shoot or club wading birds whose feathers were at their showiest during the spring mating and nesting season. Experienced hunters used .22-caliber rifles, which weren't very loud and wouldn't spook rookery residents like a shotgun would. The killing was methodical, efficient and machine-like in its deadliness.

This was neither sport hunting nor

*Feathers worth their weight in gold were in high demand for fashionable plumed hats.*

subsistence hunting. Native Americans and European settlers had hunted many species over several centuries in Florida without disrupting the natural balance of life. The plume hunters, however, were a different breed. They killed for money. Their devastating methods threatened to wipe out every wading bird in Florida.

Marjory Stoneman Douglas, the author of "Everglades: River Of Grass," painted a vivid picture of the death trail left behind by the plume hunters.

*When the sun rose the ethereal whiteness of the plumed birds shone like frost against the blue, blue sky. They were white in the night under the moon, or to the torches and firepans of the men with clubs in canoes slipping along behind the lights...By morning the bloody bodies would be drawing the buzzards and alligators. The great black Florida crows... would clean out the dying young. Ants in long lines as fine as pepper would carry off the rotting pieces of their bones.*

Jean Le Chevelier, a Canadian who lived in the Flamingo area, was one of the best known plume hunters. In one year alone, he and his men killed 11,000 wading birds and took more than 30,000 eggs from their nests. His methodical hunters could kill hundreds of birds in several hours.

Sometimes even the shooters themselves were sickened by the sight of the ravaged rookeries. One of Chevelier's men remembered returning to a shot-out rookery.

"The heads and necks of the young birds were hanging out of the nests by the hundreds," the anonymous hunter wrote. "I am done with bird hunting forever!"

Plume hunting was outlawed by the state legislature in 1891, but the mass destruction of rookeries continued. In 1905, the National Audubon Society hired Guy Bradley of Flamingo to serve as the first Audubon warden in the state. He had grown up in the wilderness and knew the identities and tactics of the plume hunters.

"Guy Bradley was glad to get the job of bird warden for the Cuthbert Rookeries," Marjory Stoneman Douglas wrote. "He was a pleasant, quiet young man, not tall, fair, with blue eyes, always whistling and a pretty good violinist. He wasn't wild like a lot of these other boys. He had an easy courage."

The Florida of 1905 was still a frontier where men made their own law with fist or rifle. Capt. Walter Smith was a former Confederate officer who had gained a reputation as a sharpshooter. He resented that Bradley had arrested his son and told the Audubon warden, "You ever arrest one of my boys again, I'll kill you!"

Not long afterwards, Smith anchored his sailboat, the Cleveland, off the mangrove shore of Cuthbert Rookery just across Florida Bay from Bradley's Flamingo home. On July 8, Bradley heard the sounds of gunfire echoing across the water.

The warden slipped his .32-caliber revolver into his pocket, said goodbye to his wife, and pushed his small sailing skiff into the water. Smith's boys, Tom and Danny, were loading the dead birds aboard their father's vessel when Bradley appeared.

"I want your son Tom," Guy allegedly called out. "Well, if you want him, you have got to have a warrant," Smith replied.

Bradley argued that he didn't need a warrant and that the Smiths were breaking the law by killing wading birds.

"Well, if you want him you have to come aboard this boat and take him," Smith said with rifle in hand.

There was one shot, maybe two; no ▷

one knows for sure. The old sharpshooter had shot down the Audubon warden. Fishermen found the drifting boat with Bradley's body on board the next day. His gun was still loaded and apparently hadn't been fired.

Smith stopped at his own home, and told his family about his confrontation with the law. "We've got to load up and get out of here," Smith said. "I'm going to Key West and give myself up. I've killed Guy Bradley."

He sailed to Key West and turned himself over to the law. He claimed self-defense and pointed to a bullet hole in his mast as proof. The grand jury met but failed to indict Smith, who had strong political connections. Some people later claimed that Smith brazenly admitted he had fired the shot and introduced himself as "the man who killed Guy Bradley."

After Bradley's tragic murder, concerned conservationists across the nation began lobbying for an end to the reign of the plume hunters. Times were changing, and more Americans were repulsed by the slaughter of wading birds. Another Audubon warden, Columbus G. McLeod of Charlotte Harbor, was murdered in 1908.

Eloquent conservationists, such as William Hornaday of the National Audubon Society, campaigned for an end to plume hunting. Another key individual was William Dutcher, who eventually became president of the National Audubon Society. He sought to attack the problem by striking at big business.

The battle shifted from the saw grass marsh to industrial New York City, where milliners had built a $17 million business. Dutcher linked forces with T. Gilbert Pearson, a Florida Quaker. They publicized the slaughter and fought for legislation to end the trade in plumes.

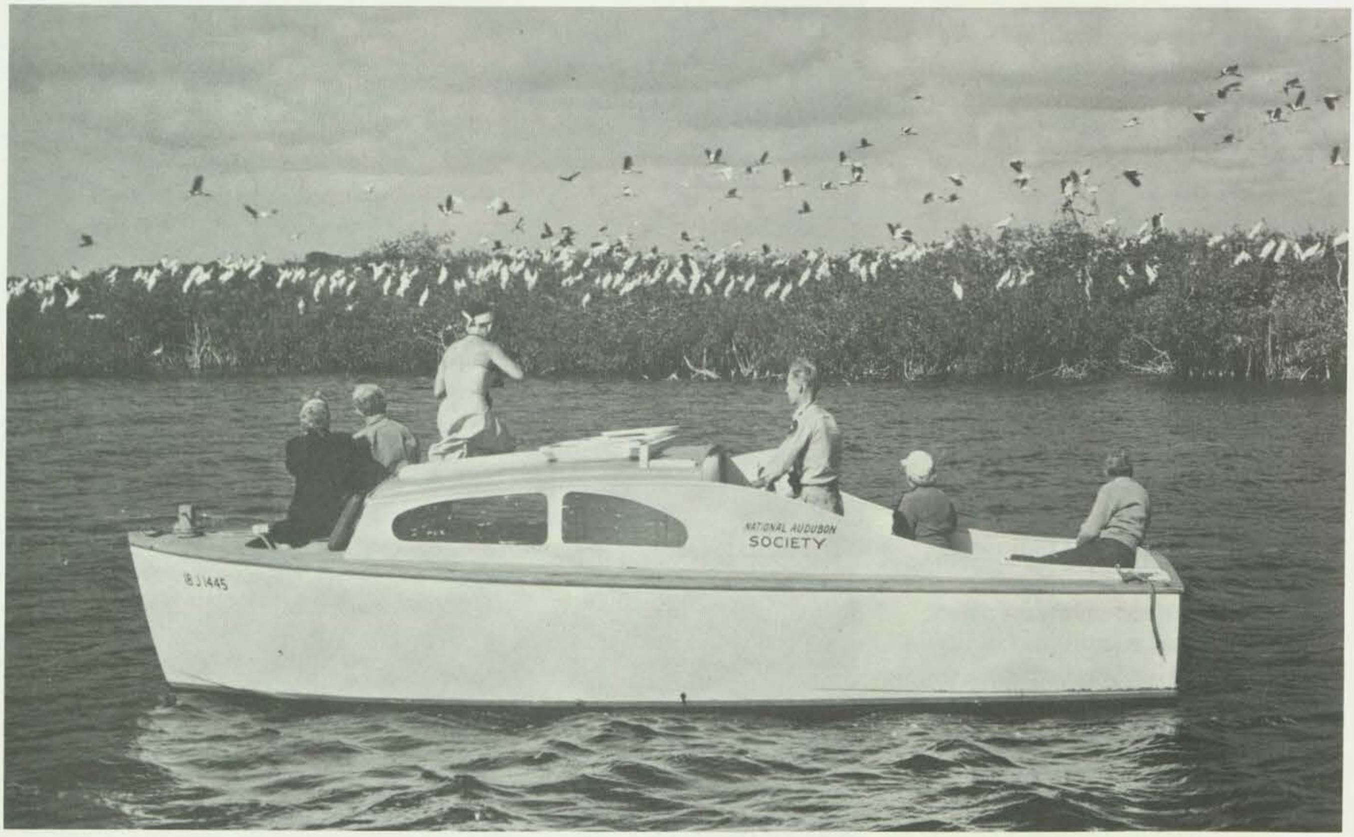
The milliners fought back to protect their business interests. At one point an industry spokesman claimed that the feathers in his company's hats were taken only from live birds. This outrageous lie was exposed by conservationists who won public support to save the wading birds.

The political and public relations effort by Dutcher and Pearson paid off in 1910 when the New York Legislature passed the Audubon Plumage Act outlawing the trade in plumes. The plume hunters responded by shipping their feathers to Havana, where merchants sold them to hat makers in Europe.

The plume hunters soon lost their market when Congress banned the import of hats decorated with plumes. Nearly as important was a change in fashion. Plumed hats slowly disappeared from the aristocratic fashion scene and became associated with women of low character.

The age of the plume hunter was coming to an end by 1930. The sound of guns was fading from the Everglades as the nation became enlightened about the conservation of irreplaceable natural resources. The sacrifice of Guy Bradley and Columbus G. McLeod gave birth to a new age of conservation, best symbolized by the creation of Everglades National Park in 1947.

Marjory Stoneman Douglas described the beauty of an Okeechobee

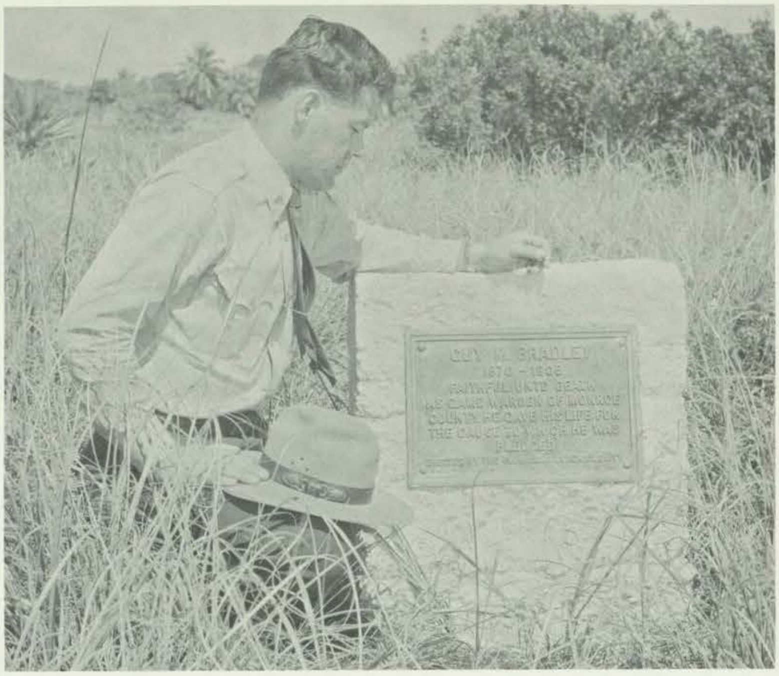


*Soon after Everglades National Park opened in 1947, conservation groups began touring the rookeries.*

wading bird rookery at sunset as "...one of the greatest nesting places in the world. They were covered with acres of stick nests of egret and glossy ibis and heron of every kind...At sunset with full crops they would move in their white thousands and tens of thousands, with the sound of great stiff silk banners, birds in flocks, birds in wedges, birds in wavering ribbons, blue and white crowds, rivers of birds pouring against the sunset..."

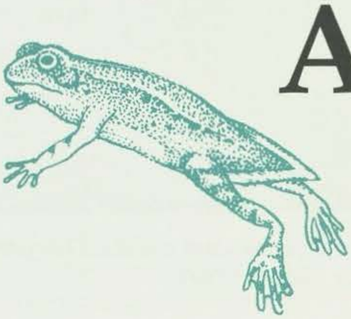
Plume hunters have gone the way of stagecoaches and silent movies. But the beautiful birds of the Everglades confront other challenges to their survival as we develop Florida's remaining wetlands and pollute our waters. The enemy has changed, but the fight for survival continues. ◆

*Lt. Jim Huffstodt is the public information specialist for the Commission's Everglades Region.*

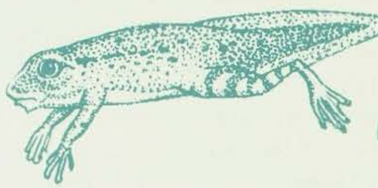


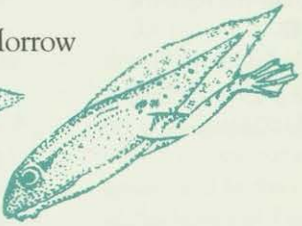
*A monument (above) honors the first Audubon warden, Guy Bradley (inset, below), in the Everglades National Park.*

# Create a Natural Freshwater Aquarium



By Susan Cerulean and Ann Morrow





Florida's long, hot summers generally boil down to two things: bored kids and trips to the nearest body of water to cool off. We combined these inevitabilities last summer, and had lots of fun besides, by creating freshwater aquaria for our homes. Family expeditions to collect native animals and plants became a lively focus of the warm months. And "frog-releases" to return transformed tadpoles to their natal waters were exciting for children and parents alike.

The beauty of the freshwater system we describe lies in its simplicity. If you own tropical or saltwater aquaria, you'll be surprised at the comparative ease of maintaining temperate freshwater tanks. By using water, plants and animals from local waters, you are creating a low-maintenance, relatively balanced ecosystem in miniature. Do remember that once you have animals in captivity, they will be entirely dependent on you. Be sure you're committed to their care and eventual return to the natural environment.

### Location and Lighting

Select a place for your aquarium away from direct sunlight. Too much light encourages excessive algae growth, which can turn the water green. The aquarium hood's light should remain on about eight or 10 hours each day.

### Water

It's best to fill your tank with water from the pond, spring or stream where you obtain your fish. Then add distilled water as needed to make up for loss by evaporation. We often bring home a gallon or so of water to replenish our tanks after each biweekly or monthly collecting trip. This water contains microscopic plants and animals to supplement diets of aquarium residents, and usually a few surprise fishes or other small creatures as well.

### Feeding

Feed your animals sparingly — only once a day. Offer live food when possible. Water fleas, chopped earthworms or dried shrimp are good choices for native aquaria. Our fish survive on dried fish food available at pet stores, but they clearly prefer the live mosquito larvae that we "rear" in a large bucket on our back porches during the warm months. If you breed your own mosquito larvae, be careful to harvest them every few days before they emerge as full-grown mosquitoes.

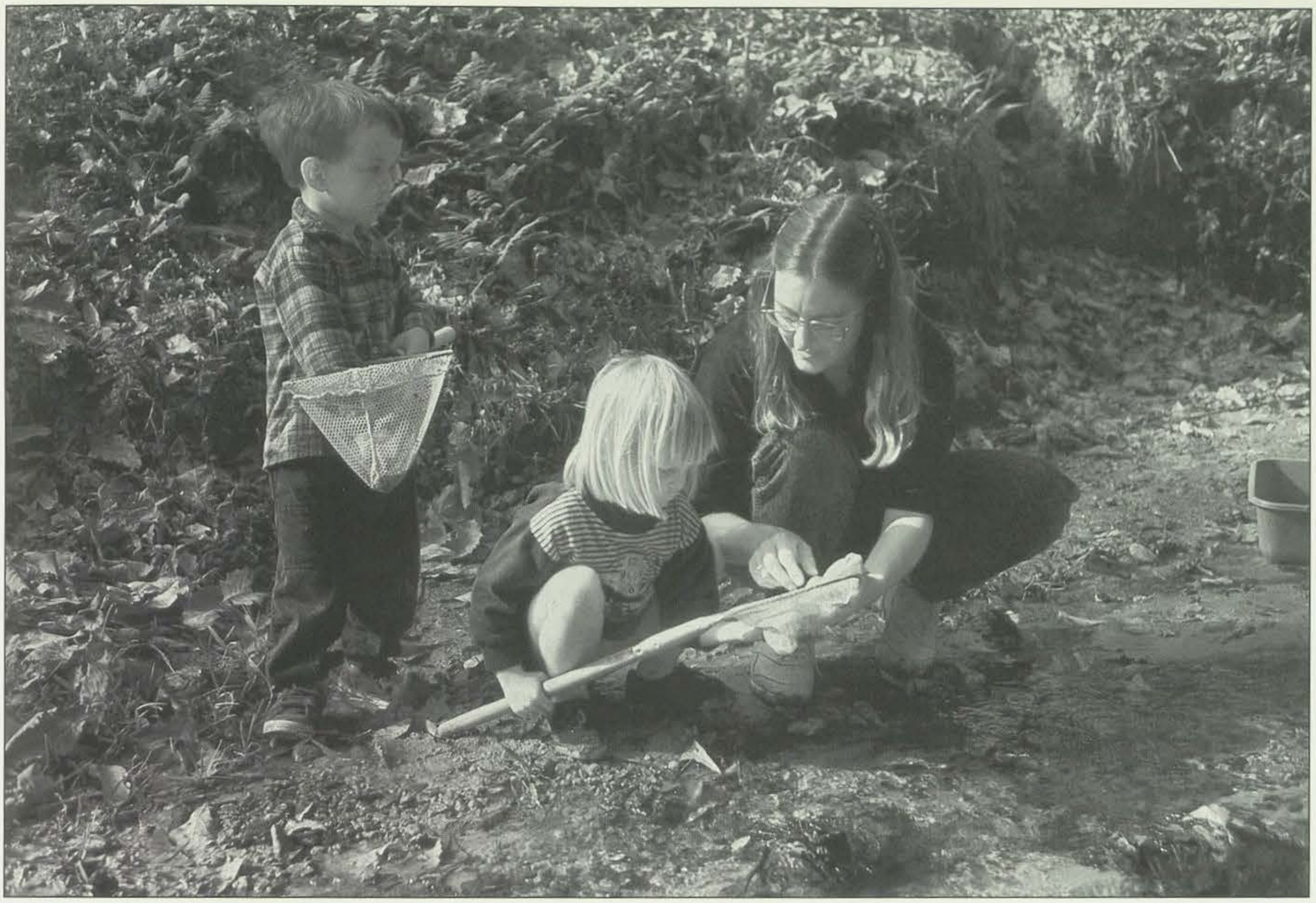
Tadpoles seem to languish without a steady supply of filamentous algae that we import from the river, and our apple snail eats amazing quantities of river vegetation of all types, or boiled lettuce in a pinch.

Over-eager children sometimes add fish food with a heavy hand, but our scavenging crayfish generally cleans up the excess.

### Stocking the Aquarium

There are limitless numbers and kinds of native creatures that can live in your tank. Although it's tempting to stock up on larger fish, a variety of smaller ones is most likely to live peacefully together. One suggested guideline is to add about one inch of fish for each gallon of water, but don't overcrowd your tank.

Increase diversity and interest by adding freshwater shrimp, snails, tadpoles, dragonfly nymphs or large aquatic insects. Observe your new aquarium residents closely and remove any obvious bullies. Otherwise you'll quickly lose smaller, defenseless creatures like



SUSAN CERULEAN

shrimp and tiny fish. Another possibility is to create a specialized aquarium in which one type of predator is the featured attraction.

If you are unsure about the care and feeding of a new or unusual addition to your tank, don't be afraid to consider the newcomer a temporary occupant, advised Tarpon Springs biologist Barbara Hoffman. Small turtles and newts are good candidates to observe for a short time and then return to the collection site.

"And maybe crayfish, too," Hoffman said. "Crayfish are wonderful, but be forewarned, they will rearrange your aquarium! They'll uproot plants, dig holes in the gravel, bulldoze large rocks, and even consume some of the smaller aquarium residents. You may *want* to take them back."

The best spot to collect residents for your freshwater tank is one that closely mimics the conditions you are providing. Animals taken from a weedy pond or spring edge will survive longer in your aquarium than creatures from a swiftly flowing stream or a large river.

Increase the diversity of animals by collecting them from different microhabitats. Freshwater shrimp and tadpoles are easy for children to net among grasses at the shallowest edges of the water. The few newts and crayfish we've netted were in much deeper water among thick vegetation or under rocks. Sweeping a small net through submerged vegetation often yields an interesting variety of beetles, small fish and snails. As you are harvesting, be careful to minimize your disturbance to the area.

### License Fees

To be legal, obtain a freshwater fishing license from the county tax collector or a subagent, such as tackle shops, fish camps, hardware or sporting good stores. A resident fishing license costs $12 and is valid for 12 months from the date of purchase. Then you may legally take freshwater shrimp and nongame fish with a cast net, minnow dip net, minnow seine or minnow trap. Any game fish you collect by these methods must be released unharmed. You may, however, use a pole and baited line to catch small game fish such as bass, bluegill or sunfish. But do so on a separate trip. It is illegal to possess game fish while in possession of the nets or traps previously mentioned, even if you did catch them on rod and reel.

It's illegal to keep endangered or threatened animals or plants, including certain snails and mussels. Consult the "Florida Freshwater Sport Fishing Guide and Regulations Summary" and the official lists of endangered and potentially endangered fauna and flora in Florida for more details. Both publications are available free from any regional office of the Commission.

### Helpful References

"The New Field Book of Freshwater Life" Elsie B. Klots

"A Practical Guide for the Amateur Naturalist" Gerald Durrell

"Pets in a Jar: Collecting and Caring for Small Wild Animals" Seymour Simon

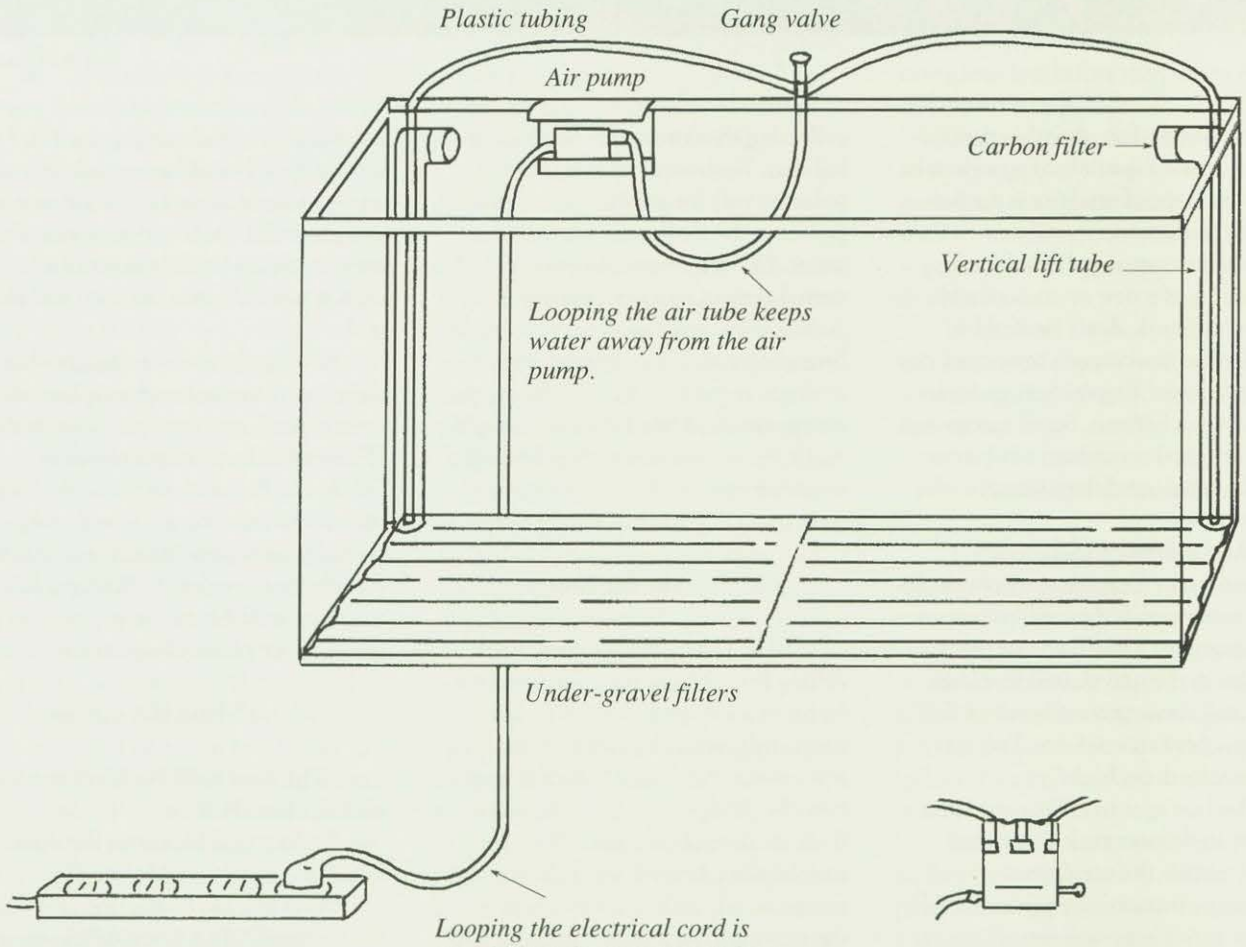
"Tracking the Unearthly Creatures of Marsh and Pond" Howard G. Smith ▷

# Natural Freshwater Aquarium Materials

- **10-gallon aquarium** - Tropical fish enthusiasts generally find that 10-gallon tanks are more difficult to maintain than 20- or 30-gallon aquaria. However, we have found that natural systems thrive without problems in the smaller (and less expensive) 10-gallon size.
- **20-inch aquarium hood with light** - It's preferable to use a hood that takes a fluorescent light fixture or Vita-lite (full-spectrum fluorescent bulb), but we have found that a single 15-watt incandescent bulb does not overheat a 10-gallon tank.
- **under-gravel filter** - This is usually sold in a kit that includes flat bottom filter plates, two vertical tubes, two air diffusers and two carbon filter cartridges.
- **6 to 7 feet of plastic tubing, a siphon hose, gravel (look for natural colors), a small net** - If purchased new, expect to pay $40-$80 for these materials. However, aquaria are frequently sold for a bargain at garage sales. Accessories are available at discount stores. Pet stores generally charge more for these items, but offer a larger selection.
- **air pump**

As you are collecting specimens, look for attractive pieces of driftwood to add a natural look to your tank and to provide a refuge for shy or secretive species.

Don't replace all the water in your tank at one time. A good rule of thumb is to siphon off 10 percent of the water whenever the quality seems to be declining. This may be every two-three weeks or as infrequently as every four-six months.

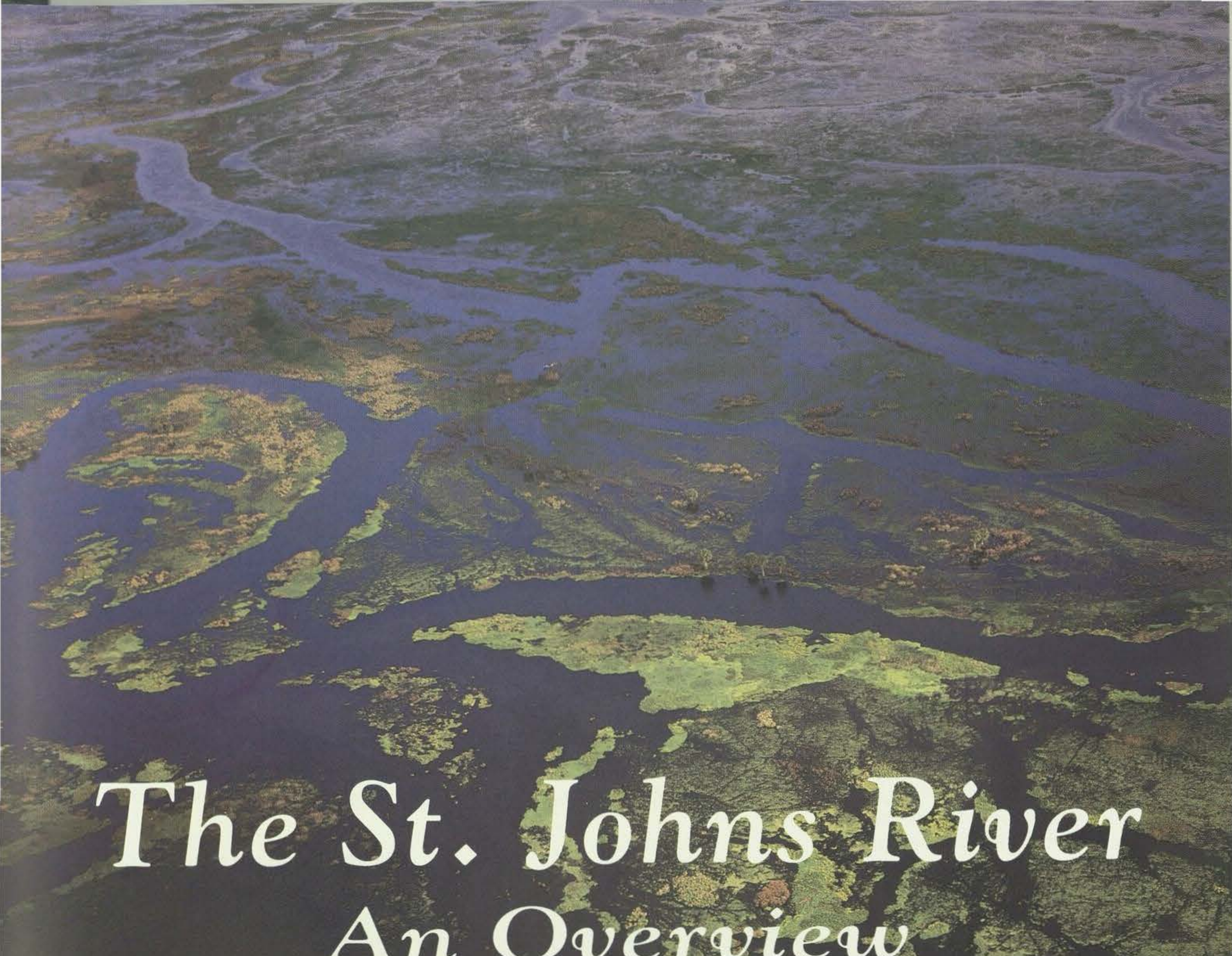


*Looping the air tube keeps water away from the air pump.*

*Looping the electrical cord is an additional precaution to keep water away from the outlet.*

*An optional surge protector keeps air flow constant.*

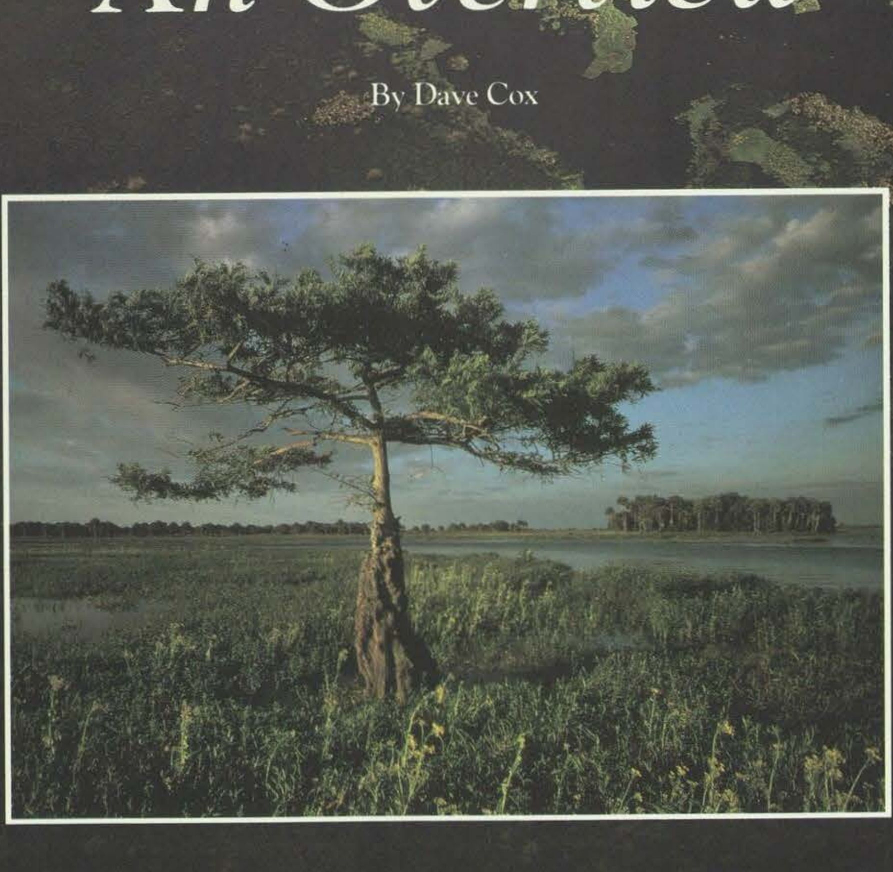
*An optional two-valve air regulator enables you to adjust air flow in your tank.*



# The St. Johns River

## An Overview

By Dave Cox



The sky was heavy with dark clouds, and the cool rain came down in sheets. The odors from the dying mud flats west of what is now Palm Bay wafted east across what had been a barrier island. That island was now joined to the mainland as the receding ocean slowly left the saltwater lagoon high and dry. For some time the frequent rainfalls had been forming channels. From the higher, southern end, the fresh water flowed steadily north to pursue the retreating sea, giving birth to the St. Johns River.

The time was late in the Pleistocene Epoch, about 25,000 years ago. The slowly forming river would become important to many generations of humans occupying the Florida peninsula. Native Americans named the river Welaka, meaning "River of Lakes." Their string of camp sites dotted both sides of the river. Many are still visible today as mounds rolling gently above the flat floodplain.

During the century after the settling of St. Augustine in 1565, a string of forts replaced the Indian villages, opening up the land. The abundant range lent itself to cattle grazing, as evidenced by such settlement names as Bovine and Cowford, later to become Jacksonville. Steamboats on the river in the 1800s allowed settlement of the frontier, and commerce began to rival that in coastal areas along the shores of the saltwater lagoons known as the Indian, Banana, Halifax and Matanzas rivers. At high water the boats occasionally came as far south as Bovine, due west of the current city of Rockledge.

In his travels in the 1700s, William Bartram marveled at the abundance of fish and wildlife along the river. The native peoples had been reaping the bounty of the fishery for centuries, and the new settlers followed suit. A commercial fishery sprang up as well as a sport fishery.

The broad, fertile floodplain, up to 13 miles wide in the headwaters, was graced with abundant fish and wildlife populations, and began to attract other lucrative agricultural interests besides cattle grazing. Cattlemen began to begrudge the river its overflow areas, often inundated for six to nine months annually. In the early 1900s George W. Hopkins made plans to drain the upper 50 miles of marsh, lakes and river to plant indigo, dumbcane and other profitable cash crops of the times.

Using hand labor, workers began construction of a canal between Lake Washington and the coastal Eau Gallie River. Hardpan too difficult for hand digging halted the work, and a steam trencher was ordered to complete the task. Meanwhile, the U.S. Army Corps of Engineers temporarily rescued the river by stopping further unpermitted drainage. In a 1904 report, the Corps' Lt. Col. F.R. Shunk said it was "certain that the marshes form an immense reservoir from which the water slowly passes into the stream below. This natural reservoir must materially aid in maintaining a good stage of water in the lower, non-tidal portion of the river, especially during the seasons of drought, when it is most needed."

The need to ensure steamboat navigability became moot by the end of the decade as a coastal railroad quickly replaced the steamboat for carrying cargo. Although Jacksonville remained an important deep-water port with increasing industrial development, the Corps relented and issued permits for dividing the upper marshes so that individual parcels could be drained. Inland railroad development allowed growth of cities like Orlando. The stage was set for the runaway development that now plagues this great river.

Encroachment on the upper river marshes through draining of individual parcels was neither planned nor controlled, and over 70 percent of the marsh was "reclaimed" for agricultural and urban use. This resulted not only in less water in the upper basin during the dry season, but more sudden and deeper flood stages during the wet season. Fish and wildlife suffer most during such a scenario. The net result has been a lowering of river stages. With less water on the remaining marsh, a noticeable reduction in fish populations has occurred in the upper basin.

The sudden rise in water levels during the wet season is often accompanied ▷

PAGE 9 PHOTOGRAPHS BY BY JAMES VALENTINE

*What is now Jacksonville was once called Cowford.*

*Near Palatka, an electrical plant operates on the banks of the St. Johns.*

PAGE 10 AND 11 PHOTOGRAPHS BY WILLIAM A. GREER

*North of Lake Poinsett, the open range alongside the river lends itself to cattle grazing.*

by a drop in oxygen content because of the decaying organic matter washed into the mainstream. Oxygen depletion has caused a plague of destructive fish kills in the past two decades, resulting in even smaller fish populations.

To compound the problem, the population boom in central Florida accelerated during the '70s with the construction of recreational theme parks in and around Orlando. Stormwater runoff and sewage from the burgeoning area is directed south to the Kissimmee River and northeast to the St. Johns River. More than 35 million gallons of treated sewage daily reaches the St. Johns from the Sanford-Orlando area by way of such tributaries as the Econlockhatchee and Wekiva rivers, as well as direct discharge into Lake Monroe. The resulting overabundance spawned blue-green algae blooms, which in turn caused devastating fish kills in the '70s and '80s.

Farther downstream, in the Jacksonville area, pollution from domestic sewage and stormwater runoff is worsened by industrial waste input. Jacksonville's favored position as a deep-water port fostered industrial development and population growth. Statistics from the Jacksonville Port Authority show a steady increase in loadings during recent years. Occasional spills of industrial and petroleum products have resulted in fish kills, and the constant inflow of domestic waste has led to a general decline in fish populations in the lower river. The lower volume of water coming from the upper river has reduced the dilution of waste products in both the middle and lower river.

Now that we recognize these problems, what are we doing to correct them? The St. Johns River Water Management District (SJRWMD) is currently repurchasing the upper river marshes. These lands are to be included in a project designed to alter the flood-and-drought cycle caused by the "reclamation" of the marsh by previous owners. The project, a joint effort of the SJRWMD and the U. S. Army Corps of Engineers, will include several reservoirs designed to provide irrigation for upper basin agriculture. Other reservoirs will separate farm runoff from the mainstream marsh, which is being restored. The project will provide an area in which water currently lost to the Indian River can be stored. The goal is to return the gradual fluctuations that nourished the St. Johns. With the natural hydrologic cycle at least partially restored, fishing should improve; the first of the reservoirs is already producing some excellent catches.

Central Florida's domestic waste is a more difficult problem to address. A

*Juniper Springs is one of a wealth of springs feeding the St. Johns.*

*Despite its problems, the St. Johns provides excellent fishing.*

regional wastewater treatment plant near Orlando has reduced the amount of phosphorus and nitrogen entering the river, but skyrocketing growth threatens to overwhelm any attempt to stem the flow of nutrients. New treatment plants that will affect the Wekiva and the Econlockhatchee rivers are planned. Major growth is expected east of Orlando, and Sanford needs to control its output to accommodate its growth.

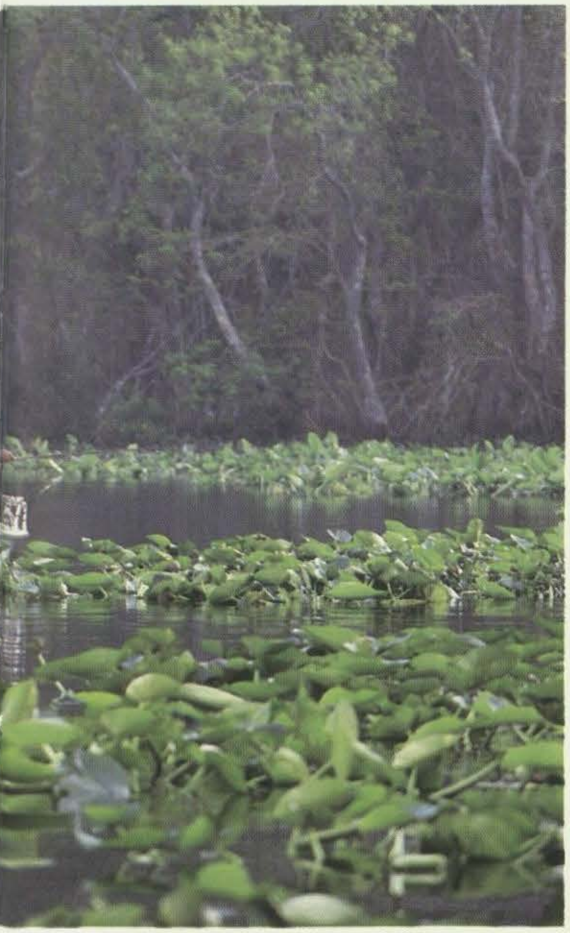
Additional water is expected to flow down the river after completion of the upper basin project, but the use of more sophisticated advanced wastewater treatment may not mitigate the anticipated increased volume.

Under the Surface Water Improvement and Management (SWIM) program, the SJRWMD is attempting to tackle the lower river problems. The Commission, other environmental agencies and local governments are working with the SJRWMD on this SWIM project. Much of the initial emphasis will be on refining our understanding of ecological relationships in the river and on increased enforcement and strengthening of existing disposal rules. Improved health of the upstream areas will allow a clearer focus on lower river problems so that corrective measures can be expedited.

Because of its unique makeup of marsh, lakes, river and estuary, the St. Johns has the best of all possible worlds for production of fish and wildlife. But a century of exploitation has left a river vastly different from the one Bartram toured. We can be encouraged that attempts have begun to restore the St. Johns. With a renewed commitment, the river will respond. It can be done.

*Dave Cox is leader of the Commission's St. Johns River Restoration Project.*

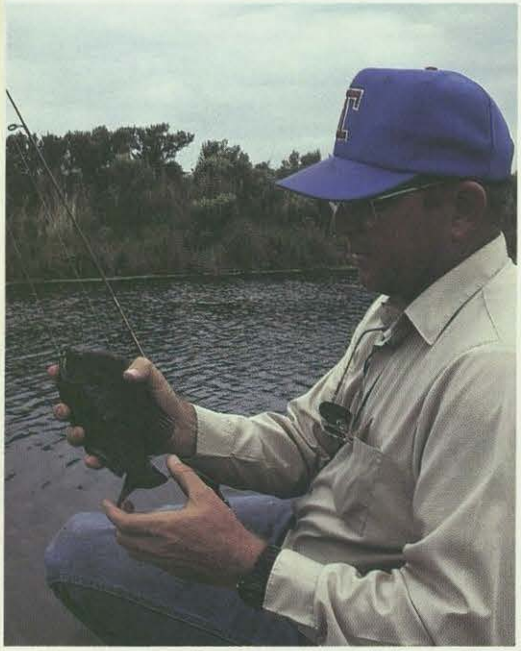
PAGE 12, 13 PHOTOGRAPHS
BY WILLIAM A. GREER



*Headwaters of the St. Johns River.*

# *The St. Johns River*
# *Farm 13 Reservoir*

Text and Photographs by Jim Porter



**This reservoir provides great fishing and hasn't even reached its prime.**

We've all heard our share of wild fishing tales, but let me tell you about a new place to fish. The good news — my story is completely true; the bad news — you and I are not out fishing!

**Consider these facts:**

- Four years ago it was stocked with bass that by age 3 averaged 4 to 5 pounds.
- Our fishing trips have averaged 50 bass per day!
- Some of the bass originally stocked now weigh 10 pounds (our best catch has been 11 pounds).
- Catching limits of bass was so easy that the Florida Game and Fresh Water Fish Commission enacted a catch-and-release regulation for that species to prevent overharvest.
- We caught bluegills that averaged better than a pound. You often can catch a bluegill on every cast (for over two hours, we did just that).
- Every angler we talked to had caught his or her limit of big slab crappie (we saw their fish and caught/released ours).

If this sounds like the fishing hole you've been looking for, pack up the boat and make tracks for the headwaters of the St. Johns River. There you'll find the Farm 13 retention reservoir — a place with great fishing that has not even reached its prime yet.

The reservoir is made up of two separate pools: Farm 13 and Stick Marsh. Both are now owned by the St. Johns River Water Management District (SJRWMD) and part of the St. Johns River Restoration Project currently underway in the headwaters region near Palm Bay and Vero Beach. Restoration efforts are under the direction of researchers from the SJRWMD, with assistance from the Commission.

The area was reclaimed from the natural St. Johns River marsh when drainage canals and pump stations removed the natural surface water in the 1940s. The land then was used for growing fruits and vegetables and for the cattle industry. But, this practice had negative side effects, and a decision was made to reverse the process.

Now, the Farm 13 and Stick Marsh plots are enclosed by earthen dikes and flooded to a depth of approximately 8 feet. This impoundment was created in order to provide a catch basin for runoff waters from the remaining farming and cattle lands to be reused for irrigation. In effect, the reservoir serves as a filter where the vegetation absorbs fertilizers and other chemicals before the runoff reaches the river. The reservoir basin also allows suspended soil to settle out within the contained area, rather than silting the St. Johns River channel.

Presently, the Farm 13 and Stick Marsh areas are separated by a low dike, but connected by a group of large culvert pipes through that same dike. Plans call for cutting a pair of openings in the dike to allow full boating access and to construct a concrete launch ramp. For now, anglers launch their boats on the Stick Marsh side and, if your boat is small enough, you can literally pull it across the dike into the Farm 13 section. Couple this with the fact that only a steep, dirt launching area exists and it is easy to see why most anglers use small, lightweight rigs to fish this area.

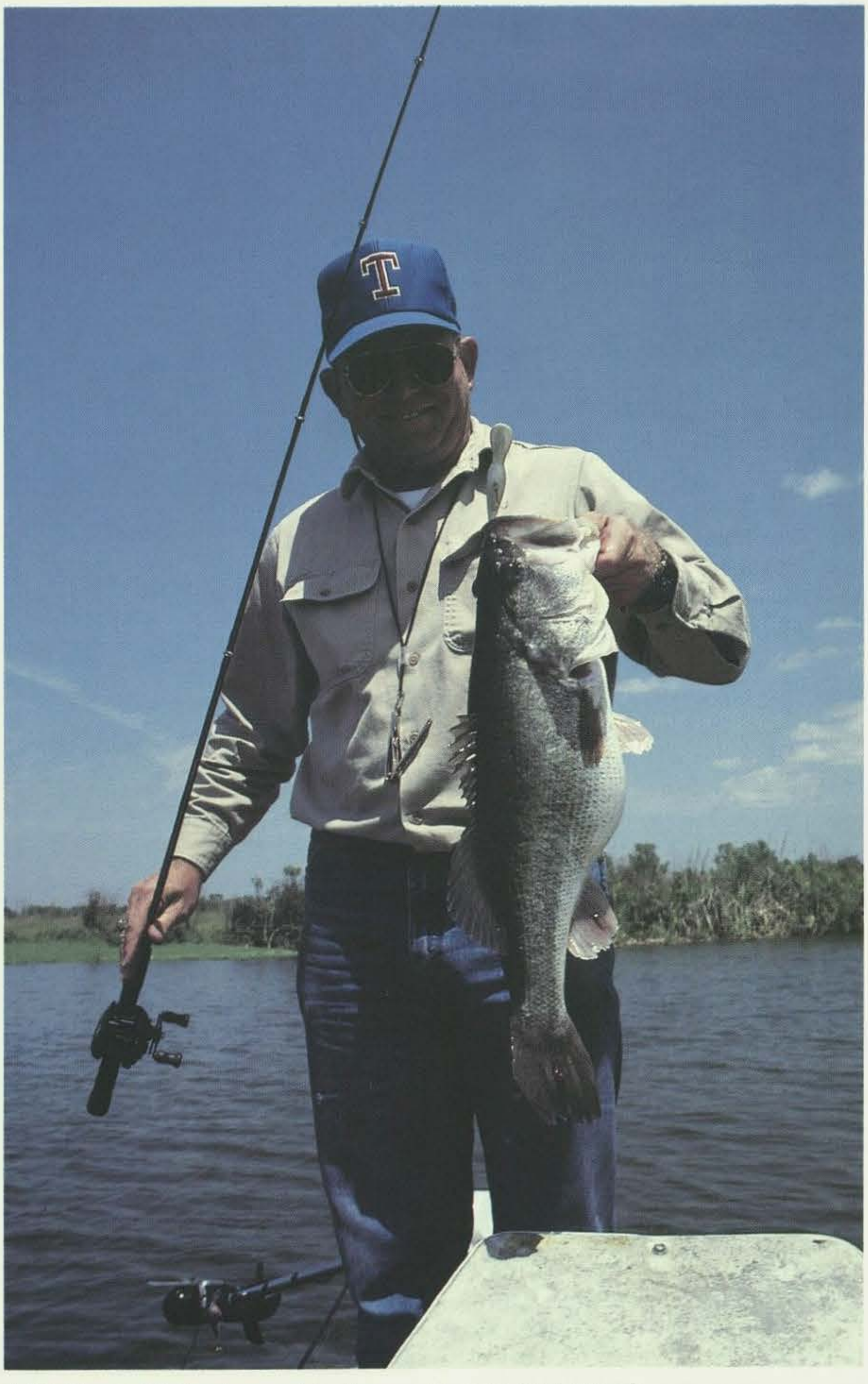
The Stick Marsh is an old swamp. The area is extremely fertile, and the abundance of cover provides a tremendous fishery. Now that the dead trees, brush and grass are flooded, hydrilla has started to flourish.

The Farm 13 section was once vegetable fields, some fruit orchards and a small wooded area. The now-flooded expanse is crisscrossed with drainage and irrigation canals, their adjacent levees and, of course, the original vegetation. Lines of grass and orderly rows of emergent brush indicate locations of submerged canal levees and orchards.

There are four ways to fish the reservoir complex effectively for bass. The easiest is with topwater lures around hydrilla and other cover. Bang-O-Lures and plastic frogs produce exceptionally well. In the summer, however, surface grasses can make topwater applications difficult in Stick Marsh, unless the lure is fairly weedless. But, the sheer number of hair-raising, ferocious surface strikes makes any inconvenience worthwhile.

Spinnerbait fishing just doesn't get any better than in the Farm 13 reservoir. It's hard to top the satisfaction of the strike of a 5-pound largemouth as it inhales a flashing, thumping spinner lure wobbling past a grass patch. White and the all-time favorite color, chartreuse, both work well. Leave off the trailer hook, use heavy line and keep a tight grip on your rod.

Plastic worms will produce a lot of good bass, especially in the Farm 13 portion. Because the water is fairly shallow, use a light slip-sinker. Work any cover you find and, in particular, levees and edges of the old canals. On the Stick Marsh side, fish the plastic worm



▷ *A.W. Short of Orlando caught a 7-pound bass in Stick Marsh.*

with short casts directly into the thickest cover available. During the summer months, the dense vegetation may require you to use the "flipping" technique. Use heavy line and a short, stiff rod in the Stick Marsh and be prepared for the best worm fishing you've ever experienced.

Crankbaits can provide excellent results. The floating Rat-L-Trap runs about 2 feet deep on a rapid retrieve and is a winner over and around cover. A bonus when fishing this lure is the ferocity of the strikes and the fact that you can often see them at the shallow running depth of the lure. Diving, lipped plugs do well along the drop-offs into the old canals. The Bagley DB-I and DB-II series are local favorites.

I seriously doubt if fishing for slab-sided speckled perch or big bluegill gets any better than in the Farm 13/Stick Marsh complex. The density of fish is mind-boggling. While live baits are fine, you don't need them to fill a cooler with either of these tasty panfish. Artificials will do the trick, are a lot cheaper and are much easier to maintain and carry.

Speckled perch will readily take small, light-colored plastic jigs, particularly along the grass bordering any canal drop-off. During the January-through-March spawning periods, nearly any vegetative cover holds this fine fish. During the summer, the majority will school in open water of the canal channels at 10-14 feet.

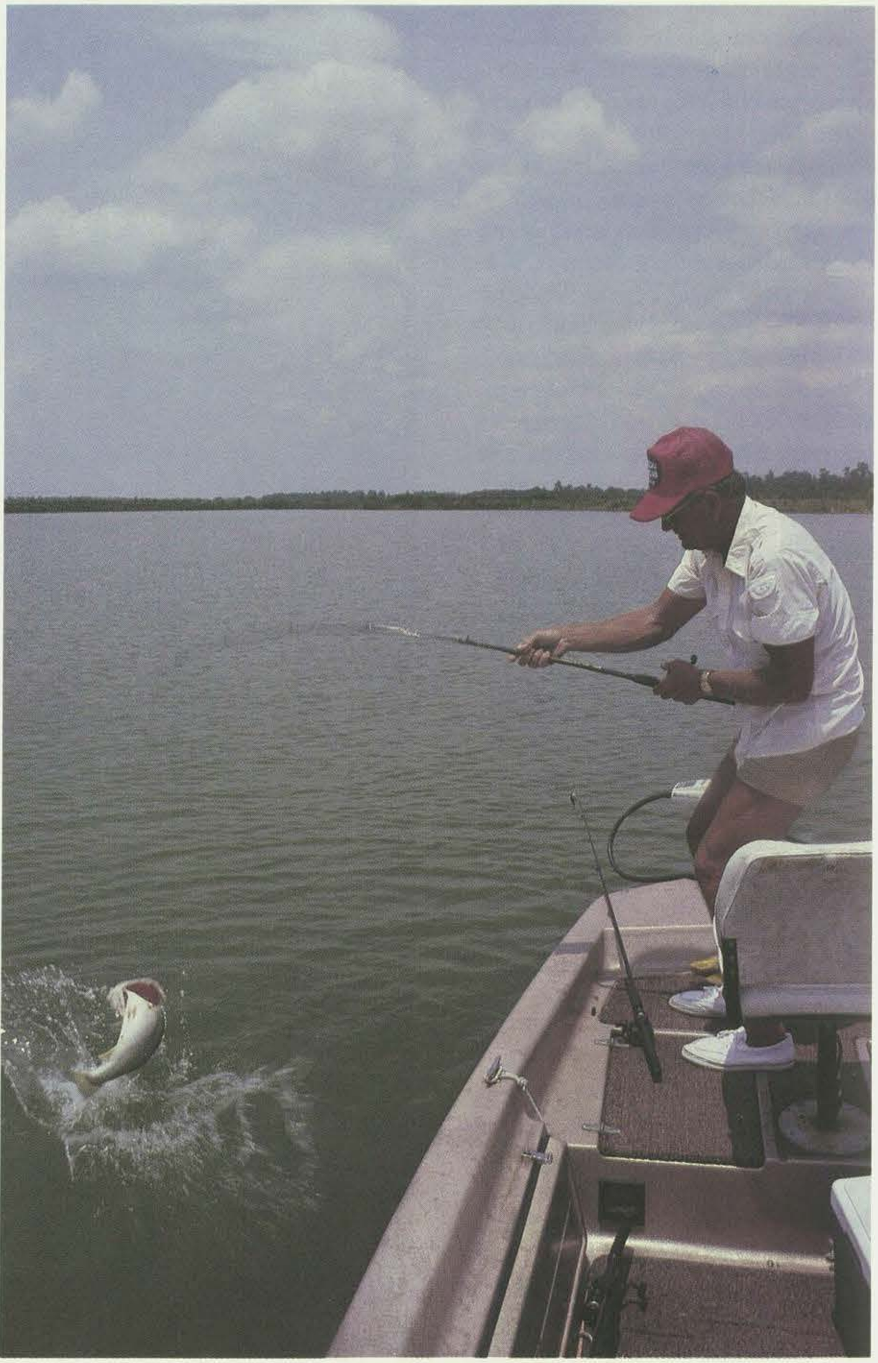
I have never seen so many giant bluegill in one place as in the Farm 13 reservoir. The first time a friend and I fished there, we used dark-colored $^{1}/_{32}$-ounce beetlespins and caught a fish on every cast for over two hours. It was simply phenomenal, and the bluegills averaged at least a pound.

Although bass tested in lakes Helen Blazes and Saw Grass, downstream from the reservoir, have enough mercury in them to warrant a consumption warning, bass from the reservoir test at safe levels. It's probable that other fish species there are also safe, but I choose not to eat them.

This fine fishing area is located just south of the city of Palm Bay. It is at the very western end of the C-54 canal, a part of the border between Brevard and Indian River counties, and off S.R. 507 between Palm Bay and the small farming community of Fellsmere. C-54 canal will appear on most maps and can be backtracked from its entry point into the Sebastian River basin near the coastline to the Farm 13 area at its western end.

Remember that small boats are recommended, and there is a total catch-and-release restriction on bass. Statewide regulations and bag limits apply to all other species.

*Jim Porter is a free-lance writer who'd rather be fishing than writing about it.*



*The author uses a larger boat launched by a 4-wheel drive vehicle.*

# The St. Johns River
# Spectacular Fishing

Text and Photographs by Bob McNally

Few Florida waters are more famous than the fish-filled St. Johns — and rightly so. The 225-mile waterway begins as a mere marsh trickle near Melbourne. It courses north through farms and open prairies, looking more like a weedy lake than a river for the first 100 miles. Around Sanford, the river builds volume from a wealth of feeder springs and creeks and soon becomes the deep and mighty St. Johns that splits the towns of Astor, Welaka, Palatka, and finally, Jacksonville.

From the source in central Florida's cattle country, to the mouth at the ocean's doorstep, the St. Johns River is one of the most remarkable waters anywhere, especially for fish and fishing.

In large part, it is the St. Johns' interaction with the marine ecosystem near Jacksonville that helps make the river unique, dynamic and remarkably resilient. The St. Johns is the southern natural limit of the anadromous American shad, as well as the striped bass. The river also is the northern natural limit of the snook, that curious tidewater fish that lives about as well in fresh water as it does in salt water. And indeed, the snook caught from the St. Johns often are taken in fresh water.

[**Editor's note**: You must have a saltwater license to keep a saltwater fish, even if you caught it in fresh water. A freshwater license is necessary to keep freshwater fish, even if caught in salt or brackish water.]

Bass fishermen have caught tarpon in Lake George, 75 miles from the ocean. South of Sanford, anglers have pulled American shad from the St. Johns that were tagged as far north as the Bay of Fundy, some 1,500 miles away in Nova Scotia, Canada. Mullet, stingrays, brown shrimp, American eels, menhaden, sea trout, red drum, croakers, black drum, sheepshead, even mangrove snapper are regularly caught from the *fresh waters* of the St. Johns, often 70 miles upriver from the mouth.

Even anglers who are unconcerned with catching marine fish benefit from this remarkable interchange of saltwater and freshwater life in the St. Johns. The tidal effects and the marine fish that migrate in and out of the river create a nutrient-rich forage base found in few freshwater habitats.

While the St. Johns has outstanding fishing for many different species, it is world famous for largemouth bass. In fact, the Welaka-Palatka area claims to be the "Bass Capital of the World." While that's a pretty heady title, there's no denying that the river and its feeder streams and lakes offer superb bass fishing all year long.

The southern headwaters of the river, near Melbourne, have good year- ▷

round bass fishing, yielding plenty of bass in the 6- to 10-pound class, particularly in spring. The shallow, prairie-like lakes in the upper river are often overlooked by bass anglers. But the fishing can be superb, and the hot action starts earlier than in many other regions of the river because it's so far south.

On many occasions I've spooked bass off their spawning beds while hunting ducks and snipe in January in lakes Poinsett, Winder and Washington. Bass rarely go on the beds in the Welaka area until at least February, with March the peak month. And bedding largemouths commonly are caught from river flats near Jacksonville in late April.

Some of the other well-known spring areas for largemouths in the river are Lake Monroe at Sanford, Lake Crescent near Crescent City, and in the narrow section of the river between Astor and Sanford.

One of my favorite stretches of river for largemouths is between Astor and Sanford. The river is tight, and on weekends it can have bothersome boat traffic. But there is much shoreline cover, such as logs, blown-over trees and weed edges, and they often are stiff with bass. In this stretch, shoreline cover usually is close to deep water, making the bass that frequent this habitat easy to locate and catch. Plastic worms, sinking crankbaits and weedless jigs are deadly. In spring, backwater "mud lakes" and canals that feed the river in this region hold tremendous numbers of heavy bass.

Lake George, north of Astor, is one of the best and most famous largemouth bass spots in the world. During the height of the February-March bass spawn, you can see heavy largemouths fanning their beds literally for miles along eel grass flats. Several spring creeks feed the lake on the west shore, and some of the earliest good bass fishing in the area is found in the creeks, often by late January. The springs also are havens for crappie, striped bass and bream.

My personal favorite bass lake in all the world is located north of Lake George, off the west side of the St. Johns. This is Rodman Reservoir, or Lake Ocklawaha. The manmade lake was created when the Oklawaha River, which feeds the St. Johns west of Welaka, was dammed for the construction of the now-defunct Cross Florida Barge Canal. The canal was folly, and while it is a shame the Oklawaha River was inundated by a reservoir, Rodman is the most fish-filled body of bass water I've ever cast a lure into. [ **Editor's note**: Under the federal deauthorization of the canal, its lands and structures will be transferred to the state following the development of a management plan. Among the management options under consideration are maintaining the reservoir as is; more intensive management of the reservoir; and restoring the riverine system, returning the Oklawaha to its natural course.]

Some years ago, two friends and I caught 18 Rodman bass in an action-packed morning. The eight largest fish weighed from 6½ to 10½ pounds. That morning, I made three casts to a single flooded stump and landed three bass weighing 10½, 9¾ and 8½ pounds. I've caught more big bass from Rodman than from all other waters combined, and I've fished North America's best bass lakes — from Cuba to Canada.

**Fishermen have caught tarpon in Lake George, 75 miles from the ocean.**

The U.S. Army Corps of Engineers periodically drains Rodman to manage its abundant weeds, and this helps make it a perpetual fish factory few waters can compare with. It has outstanding bream and crappie fishing, and the eagles, ospreys, wood storks, alligators and other wildlife that abound in Rodman make it a treasure for all Floridians.

Farther north, the St. Johns narrows until it approaches Jacksonville, where it widens to nearly four miles across. This "lower river" fishery for largemouths is excellent, and yields some huge fish. An angler fishing a weedless spoon in April caught an 18-pound largemouth from an eel grass flat near Green Cove Springs several years ago. Many 6- to 10-pound fish are caught on grass flats and in canals and creeks off the river during spring.

For many anglers, summer bass fishing in the lower river is best. This is when marine shrimp abound, and from June through September bass station themselves around numerous docks and pilings in the river from Palatka to Jacksonville. Anglers who use live shrimp around docks frequently catch limits of fish, and 3- to 6-pounders are not unusual. Dock anglers who use live shrimp — in the *freshwater* reaches of the river — also frequently catch striped bass, red drum, even flounder and sheepshead.

Bream fishing throughout the St. Johns River is superb. Fishing for bluegill, redear sunfish (shellcracker) and redbreast sunfish gets into full swing in April and remains good through September. Huge hard-bottom areas in many regions of the river are historic spawning sites or beds that have offered generations of anglers excellent spring fishing.

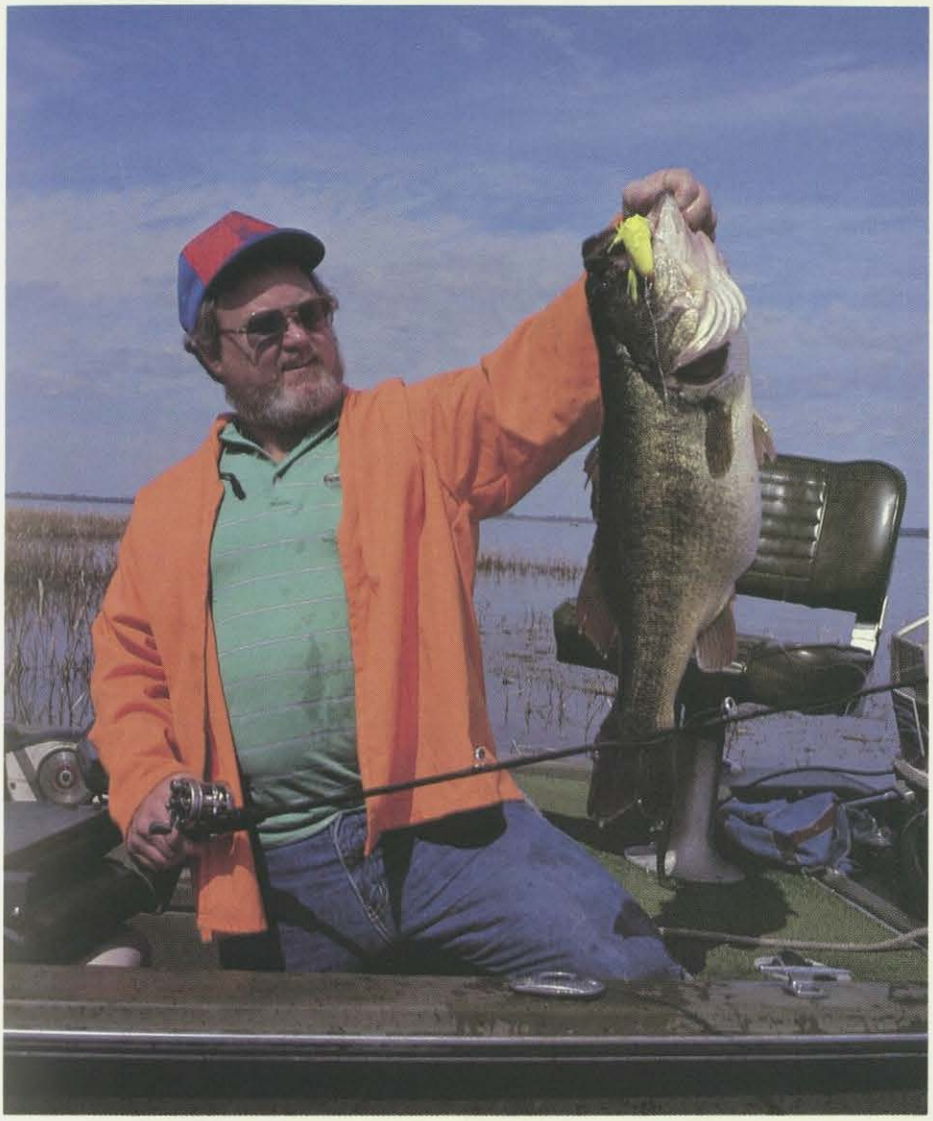
The so-called "big bed," in the southeast corner of Lake George in Jones Cove, is one such spot. Such prime bream beds are available and well-known throughout the river, yet the St. Johns is so huge and dynamic that new bream beds are discovered by anglers every spring. This adds an enjoyable and important exploratory aspect of fishing that only large watersheds like the St. Johns offer.

Black crappie (speckled perch) fishing also is excellent in the St. Johns. For many years Lake George was a prime crappie spot, but for some reason its popularity has waned. Yet crappies still are caught in good numbers during winter and early spring at the south and west sides of Lake George and in the mid-lake bombing range pilings.

Lakes Dexter, Woodruff, Monroe and Crescent currently are the most popular spots for crappies on the St. Johns. The lower river also has plenty of specks.

One October afternoon, for example, my three children and I caught two dozen crappies from a boat dock in just a couple of hours fishing with live minnows. The seven largest crappies weighed a total of exactly 13 pounds!

Striped and sunshine bass fishing in the St. Johns has had its ups and downs. But even in "off" years experienced anglers make some incredible catches of linesides. The best catches of the heaviest stripers come in cold, overcast and windy weather during fall and winter. Anglers have consistent success by casting or trolling deep-diving plugs



*This mighty river flows south to north and is remarkable for year-round fishing. Huge largemouth bass have made the St. Johns River and its feeder creeks and lakes world famous.*

and jigs around bridge abutments, docks and piers or near points of land where there is good current flow. Most linesides are in the 3- to 6-pound range, and although fish to 18 pounds have been recorded, a 10-pounder is a good fish.

Many fishermen are unaware of it, but the St. Johns provides fast striper fishing year round. In fact, some of the most predictably good fishing of the year is in summer, when linesides jam into cool springs. Some springs feeding the St. Johns are fish sanctuaries, so linesides and other species are protected there. But the mouths of spring creeks, like those along the west shore of Lake George, offer excellent early and late fishing during the heat of summer.

Deep underwater springs also abound in the St. Johns, and some are well-known havens for hot-weather stripers. The "Croaker Hole," located at the southwest corner of Little Lake George near Welaka, commonly gives up limit numbers of stripers. One July day some years ago three friends and I caught our legal limits from the Croaker Hole that weighed just under 100 pounds in aggregate. We caught all the fish with live eels, which are indigenous to the St. Johns and are the preferred food of river linesides.

Fishing for American shad in the narrows of the river south of Lake Monroe is an increasingly popular winter activity for thousands of anglers. Most fishermen slow-troll the river narrows with special shad-dart jigs and spoons. Casting from sod banks also is popular and effective, but watch your step — cattle graze along these banks. Most shad weigh 2 to 3 pounds, but a few catches approach the 5-pound class. Fly fishing for the high-leaping shad is growing in popularity, and it's a great way to spend a sunny, winter's day.

I stood on a sod bank one afternoon in February with good friend Bill Sargent, outdoors editor of the *Florida Today* newspaper. We hadn't caught a lot of fish, but we'd landed enough, and the sunset we watched was spectacular. Just as the sun sank in red flames, I hooked, fought and then collared a 2-pound shad. I removed the little tinsel streamer from the shad's jaw and raised the fish to admire it before release.

"Hard to believe that this fish left the St. Johns as a minnow, somehow survived the ocean elements and migrated to Canada, then returned to spawn again right here," Bill said. "Pretty amazing river, isn't it?"

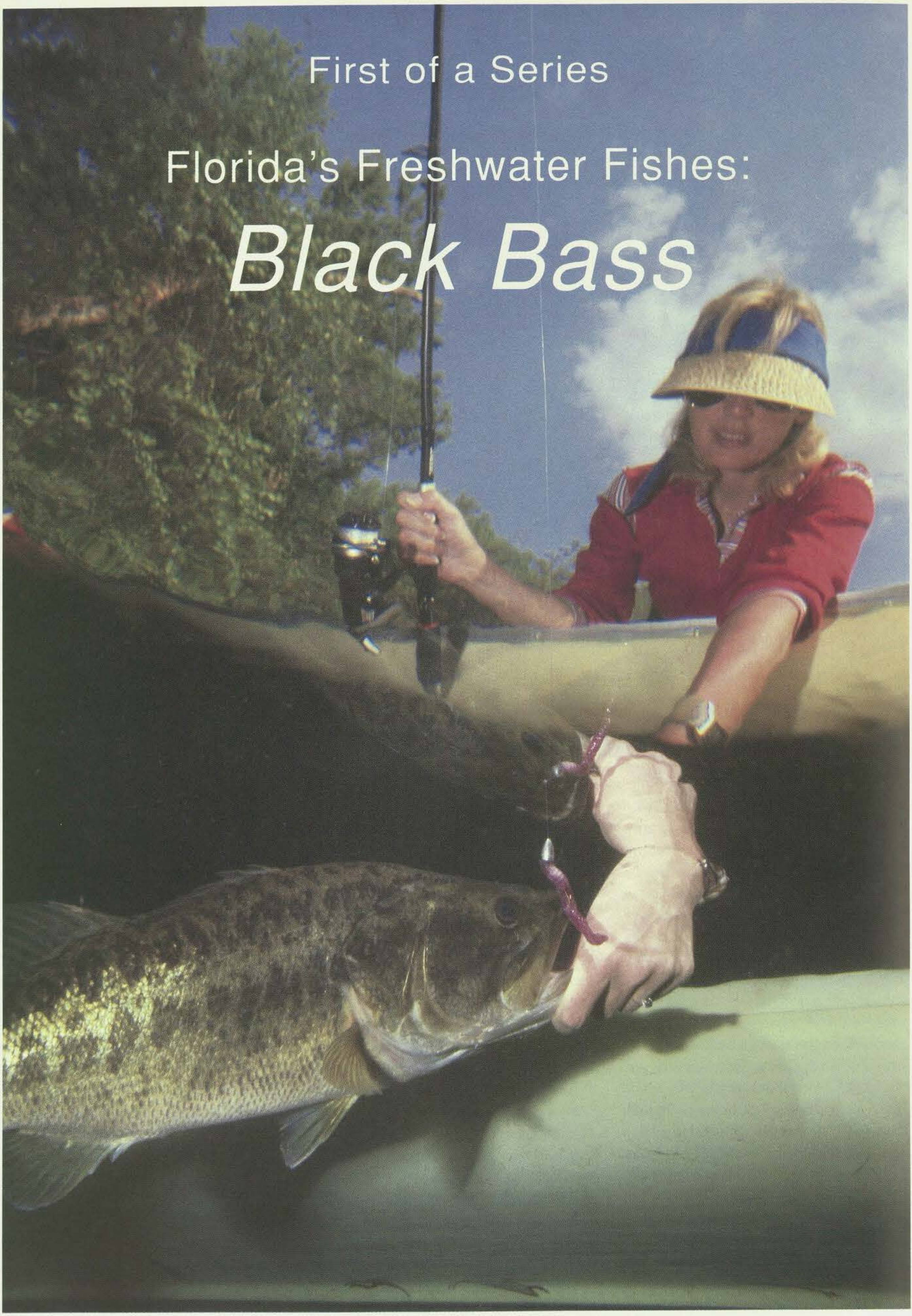
I just smiled, and watched the shad tail away from the boat.

*Bob McNally is a free-lance writer who loves living on and fishing the St. Johns River. He is a frequent contributor to* **FLORIDA WILDLIFE**.

### First of a Series

## Florida's Freshwater Fishes:

# *Black Bass*



DOUG STAMM

*Largemouth bass guard the nest.*

JAMES VALENTINE

By Mark A. Trainor
Illustrated by Duane Raver Jr.

Most Floridians recognize only one species of black bass: the largemouth bass. It is not widely known that largemouth bass can be divided into two subspecies (northern and Florida), or races, and mixtures of both. Other, not so well known, black bass that occur in restricted areas of the state are the Suwannee, spotted and redeye (shoal bass).

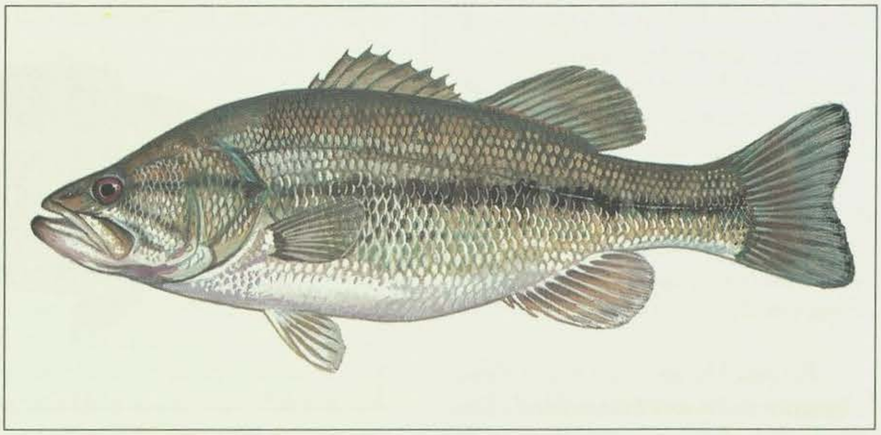
This first article in a series on Florida's fishes features the black basses. This group belongs to the genus *Micropterus*. Black bass are actually members of the sunfish family, *Centrarchidae*, rather than being grouped with "true" basses and temperate basses such as striped bass and white bass.

### LARGEMOUTH BASS

**Common Names** - black bass, Florida bass, Florida (or southern) largemouth, green bass, bigmouth, bucketmouth, linesides.

**Description** - The largemouth is the largest member of the sunfish family. It generally has light greenish to brownish sides with a dark lateral line that tends to break into blotches toward the tail. Often confused with smallmouth and spotted bass, it is easily distinguishable because the upper jaw extends beyond the rear edge of the eye. Also, its first and second dorsal fins are almost separated by an obvious deep dip, and there are no scales on the soft-rayed second dorsal fin or on the anal fin.

**Subspecies** - Two are recognized: the northern largemouth and the Florida largemouth. The two look much the same, but the Florida largemouth ▷



*Largemouth Bass*

has 69-73 scales along the lateral line compared to the northern largemouth's 59-65 scales. Florida bass grow to trophy size more readily than northern largemouth in warm waters.

**Range** - Originally, the Florida largemouth was found only in peninsular Florida, but the fish has been stocked elsewhere in Florida and in several other states including Texas and California. Pure northern largemouth bass are not found in Florida. Genetic intergrades between the subspecies, however, occur throughout north Florida.

**Habitat** - Prefers clear, nonflowing waters with aquatic vegetation where food and cover are available. It occupies brackish to freshwater habitats, including upper estuaries, rivers, lakes, reservoirs and ponds. It can tolerate a wide range of water clarity and bottom types, prefers water temperatures from 65 to 85 degrees, and is usually found at depths less than 20 feet.

**Spawning Habits** - Spawning occurs from December through May, but usually begins in February and March in most of Florida when water temperatures reach 58 to 65 degrees. The spawn continues as temperatures rise into the 70s. The male builds a saucer-shaped nest 20 to 30 inches in diameter by placing its lower jaw near the bottom and clearing a circular area around this mark with his tail. Bass prefer to build nests in hard-bottom areas along shallow shorelines or in protected areas such as canals and coves. Depending on her size, the female can lay up to 100,000 eggs, which are fertilized by the male as they settle into the nest. Within five to 10 days after spawning is completed, the male guards the nest and eggs and later the young, attacking anything that approaches the nest. The female bass stays near the nest or may swim a short distance and remain listless for up to a day after spawning. After hatching, the fry swim in tight schools, disbanding when they reach a length of about 1 inch.

**Feeding Habits** - The diet of a bass changes with its size. Young fish feed on microscopic animals (zooplankton) and small crustaceans such as grass shrimp and crayfish. Fingerling bass feed on insects, crayfish and small fishes. Adult bass will eat whatever is available, including fish, crayfish, crabs, frogs, salamanders, snakes, mice, turtles and even birds.

**Age and Growth** - Growth rates are highly variable, with differences attributed mainly to food supply and length of growing season. Female bass live longer than males and are much more likely to reach trophy size. By age 2 or 3, females grow much faster than male bass. Males seldom exceed 16 inches, while females frequently surpass 22 inches. At 5 years of age females may be twice the weight of males. Bass average about 7 inches in length at age 1 and reach an adult size of 10 inches at about 1½ to 2½ years. Generally, trophy bass (10 pounds and larger) are females that are about 10 years old. The oldest Florida bass identified by fisheries biologists was 16 years of age.

**Sporting Qualities** - The largemouth bass is Florida's most popular freshwater game fish. Much of its popularity is due to its aggressive nature and willingness to strike a lure or bait with explosive force. It will strike almost any kind of artificial lure or live bait, but most are taken on plastic worms, surface plugs, spinnerbaits, crankbaits, bass bugs and shiner minnows. The value of the largemouth as a sport fish has prompted a movement toward catch-and-release fishing.

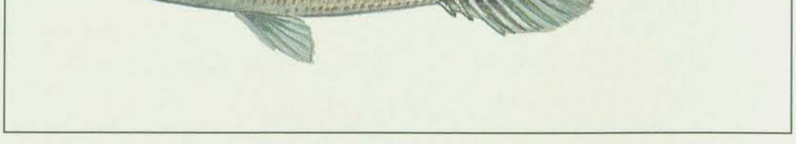
**Eating Quality** - The meat is white, flaky and low in oil content. The flavor depends upon the way the fish is cleaned and prepared. The strong, weedy taste of bass caught in some waters may be eliminated by skinning the fish and salting and peppering the fillets before battering. Small fillets usually are fried, while larger ones may be baked.

**Records** - World Record - 22 pounds, 4 ounces, caught in Montgomery Lake, Georgia in 1932. Certified State Record - 17 pounds, 4¼ ounces, caught in an unnamed lake in Polk County in 1986 by Billy M. O'Berry. Uncertified State Record -20 pounds, 2 ounces, caught in Big Fish Lake (private pond) in Pasco County in 1923 by F.J. "Fritz" Friebel.

## SUWANNEE BASS

**Common Names** - No other common names are known. It is sometimes incorrectly identified as a smallmouth bass, redeye bass or spotted bass.

**Description** - A heavy-bodied bass seldom exceeding 12 inches in length. The most distinguishing characteristic of a mature Suwannee bass is its bright turquoise blue coloring on the cheeks, breast and ventral parts. The upper jaw does not extend beyond the eye. Also, there is a shallow notch between the dorsal fins, with a distinct connection between the spiny and soft-rayed dorsal fins. A pattern of dark, vertical blotches



*Suwannee Bass*

occurs along the lateral line. There is generally a distinct dark blotch where the lateral line meets the caudal fin. Scales are present on the bases of dorsal, anal and caudal fins.

**Subspecies** - It is a distinct species with no known subspecies.

**Range** - Restricted to the Suwannee and Ochlockonee river systems of Florida and Georgia. It also occupies spring-fed lower reaches of the Santa Fe and Ichetucknee rivers, tributaries of the Suwannee River.

**Habitat** - Generally prefers more rapidly flowing water along rocky shoal areas but is not restricted to these areas. It also is found in large springs and spring runs. The Suwannee bass is designated a species of special concern because of its limited range. Degradation of habitat or water quality in the Suwannee and Ochlockonee rivers could threaten this species.

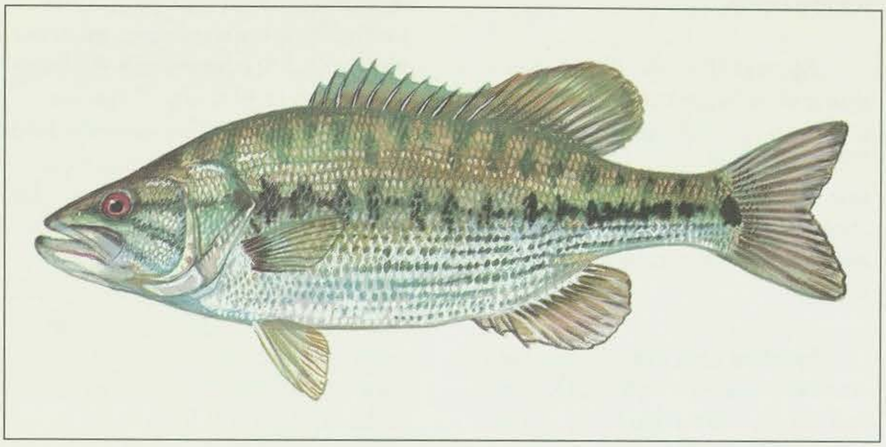
**Spawning Habits** - Spawning occurs from February to June when water temperatures reach 65 to 68 degrees. Reproduction is similar to the largemouth bass, including nest construction.

**Feeding Habits** - Young fish feed on aquatic insects and small crustaceans. Larger fish feed heavily on crayfish and also take small fishes.

**Age and Growth** - Suwannee bass are generally smaller than largemouth bass. A 2-pound fish is considered large. It seldom exceeds a length of 10 inches or a weight of 12 ounces.

**Sporting Qualities** - First described as a species in 1949, the Suwannee bass is seldom specifically fished for due to its small size and limited range. For a small fish, it is a strong fighter when caught on light tackle. Like a largemouth bass, it will take live baits or artificial lures. Popular lures and baits include small crayfish-colored spinnerbaits, crankbaits, plastic worms, jigs and crayfish.

**Eating Quality** - White, flaky meat with a good flavor; may be prepared like other freshwater bass.



*Spotted Bass*

**Records** - State and World Record - 3 pounds, 14 ¼ ounces, caught in the Suwannee River in 1985 by Ronnie Everett.

## SPOTTED BASS

**Common Names** - Kentucky bass, Kentucky spotted bass, northern spotted bass, Alabama spotted bass, Wichita spotted bass, black bass, smallmouth bass and spot.

**Description** - Similar in appearance to the largemouth bass. It has a green to olive-green hue; white, mottled belly; and a broad stripe of broken blotches, usually diamond-shaped, along the midline of the body. Unlike the largemouth, the spotted bass has scales on the base portion of the second dorsal fin, its first and second dorsal fin are clearly connected, and its upper jaw does not extend past the eye. Above the lateral line there are dark markings, and below the lateral line the scales have dark bases that give rise to the linear rows of small spots that are responsible for the common name.

**Subspecies** - Three are recognized. The northern spotted bass has 60 to 68 scales along the lateral line, the Alabama spotted bass has 68 to 75 scales along the lateral line, and the Wichita spotted bass usually has 13 dorsal rays and often lacks rows of black spots along lower side of body. Spotted bass can be found from Texas to the Florida panhandle including Georgia, Alabama, Tennessee and Kentucky. The Wichita spotted bass, if not extinct, as some think, is limited to the West Cache Creek, Oklahoma. The Alabama spotted bass has been introduced into California waters.

**Range** - While widely distributed outside Florida, a limited number of spotted bass inhabit panhandle streams from the Perdido River to the Apalachicola River. The fish primarily occurs in and west of the Choctawhatchee River.

**Habitat** - Prefers small to medium streams and rivers with clear, slow-moving water, gravel or rock bottoms. Spotted bass may occupy reservoirs, but are seldom found in natural lakes. It does not enter brackish water.

**Spawning Habits** - Spawns very much like the largemouth. Spawning occurs in the spring when water temperatures reach 60 to 65 degrees. Sexually mature males build saucer-shaped nests on a soft, clay bottom or on gravel bars generally near brush, logs or other heavy cover. The eggs hatch in four or five days, yielding up to 3,000 fry per nest.

**Feeding Habits** - The principal food items are crayfish, fish and aquatic insects. The species is less piscivorous ▷

(fish-eating) than other black basses and seems to be more selective in its feeding habits.

**Age and Growth** - Tends to grow slower than largemouth bass and does not attain as large a size as other species. The young grow to 1½ to 4 inches the first summer. Maturity is reached at about 7 inches. By age 8 the fish usually reaches its maximum length of 18 inches.

**Sporting Qualities** - Strong fighters when caught on light tackle. Popular lures and baits include jigs, crankbaits, spinners, small plastic worms and crayfish.

**Eating Quality** - White, flaky meat with good flavor. Generally considered better eating than largemouth.

**Records** - World Record - 9 pounds, 4 ounces, caught in Lake Perris, California in 1987. State Record - 3 pounds, 12 ounces, caught in the Apalachicola River in 1985 by Dow Gilmore.

## REDEYE BASS

**Common Names** - Coosa bass, shoal bass, Flint River smallmouth, Chipola bass, black bass.

**Description** - The red color of its eyes and fins easily separates this species from other bass. Suwannee and shoal bass also have red eyes but generally have less red on fins. Redeye bass generally are brownish to greenish in color. Along its sides are vertical bars with light centers. Coloration above the lateral line tends to be bronze-olive to a dark olive mottling, while below the line is a yellow-white to blue shading. The fish has a prominent dark spot on the gill cover. Other distinctive features include scales on the base portion of the soft-rayed dorsal fins, clearly connected first and second dorsal fins, and an upper jaw bone that does not extend beyond the eyes.

**Subspecies** - No known subspecies. There are two widely recognized forms: the Apalachicola form, or shoal bass, and the Alabama form. The Apalachicola form is found in the Apalachicola River system in Florida and in the Chattahoochee, Chestatee and Flint rivers in Georgia and Alabama. There is some disagreement as to whether it is the same as the Alabama form found in Alabama, Tennessee, Georgia and North Carolina or a different species. The Apalachicola form normally can be distinguished by a dark spot at the base of the tail and one on the gill cover. Some scientists have claimed the shoal bass as a new species, but it has yet to be given a scientific name and some consider it to be a variety of redeye bass, often referred to as the Apalachicola form.

**Range** - It has been recorded from the Apalachicola and Chipola river systems in Florida. The shoal bass is common in the Chipola River where shoals exist. But the redeye bass of Alabama and Georgia is so rare in Florida that it is not considered a resident fish.

**Habitat** - Likely to be found in rocky runs, pools of creeks and small to medium rivers close to main-channel habitat. It is seldom found in natural lakes, ponds or impoundments. It prefers a water temperature of about 65 degrees. Shoal bass in the Chipola River are closely associated with rock shoals and are uncommon in other habitats.

**Spawning Habits** - The redeye bass spawns in coarse gravel at the heads of creek pools in late May to early July. It will not spawn in ponds or lakes and prefers a spawning temperature of 62-69 degrees. Like the largemouth, the male prepares the nest and guards the eggs and fry.

**Feeding Habits** - The redeye bass feeds mainly on aquatic insects at the surface. It also feeds on larval insects, crayfish and fish.

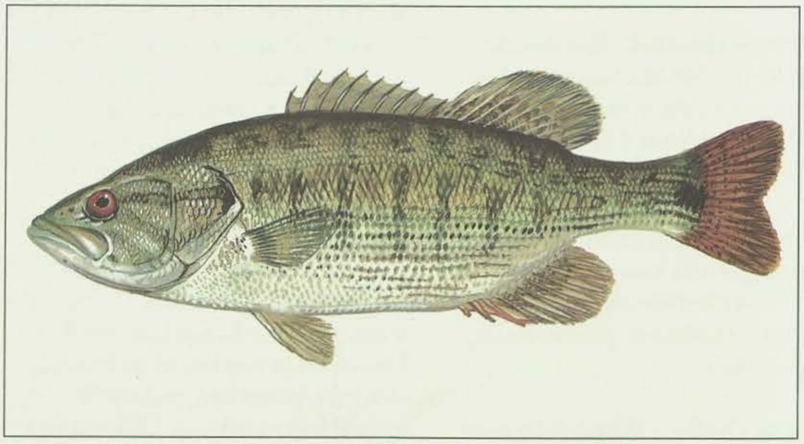
**Age and Growth** - The growth rate of redeye bass is slow when compared to other species of black bass. Growth is fast the first year but decreases as the fish becomes older. Shoal bass grow much faster than redeye bass.

**Sporting Quality** - The redeye is a good game fish and a scrappy fighter that is often difficult to catch. Worms, minnows or crayfish as well as small spinners and a wide variety of small surface lures are effective. Some have been known to weigh more than 8 pounds.

**Eating Quality** - Good. It has white, flaky meat that tends to be drier than that of a largemouth.

**Records** - World Record - 8 pounds, 3 ounces, caught in the Flint River, Georgia in 1977. This fish was the "shoal bass" or Apalachicola form. State Record - 7 pounds, 13¼ ounces, caught in the Apalachicola River in 1989 by William T. Johnston.

*Mark Trainor is a public information specialist in the Commission's Tallahassee office.*



*Redeye Bass*

# Big Blue Cats In the Sunshine State

By Ross Dames

The Sunshine State boasts sun-filled days, deep blue skies, and now big blue catfish.

Although Escambia River fishermen claim they've been catching blues for many years, the species was not officially recorded in Florida waters until 1990. Florida Game and Fresh Water Fish Commission biologists first observed blue catfish during fishing surveys on the Escambia River in June of that year. Other blues were seen during later surveys, and by the end of October three reports of big blue catfish caught by fishermen were verified by Commission personnel.

Northwest Florida's Escambia River is one of four rivers flowing into the Pensacola Bay system. The Escambia begins in Alabama, where it is called the Conecuh River, and flows 192 miles to Pensacola Bay, with only the last 50 miles lying within Florida.

### Big Catches

Three blue cats weighing over 50 pounds each have been hauled in by local fishermen to date. Two of the fish were caught on rod and reel, and one was caught on a trotline. The largest of the three weighed 53 pounds and was caught on rod and reel by Eddie Flowers of Jay. These catches prompted the Commission to add blue catfish to its Big Catch and Record Fish programs and, for now, Flowers' catch stands as the state record.

### Identification

Blue catfish are somewhat similar in appearance to channel catfish, ▷

ROSS DAMES

*Eddie Flowers with his state record, a 53-pound blue cat.*

which are found throughout Florida. Although each species is often misidentified as the other, the two are fairly easy to distinguish. Channel catfish typically have dark spots scattered on the back and sides; however, these spots are not always visible on small young and on large adults. Large channel catfish, especially males, are sometimes bluish, with no spots and are often incorrectly called blue catfish. Blue catfish never have spots.

The outer margin of the anal fin on channel catfish is rounded outward, but on blue cats the margin of the anal fin is straight and tapered. Also, the anal fin on blue catfish contains 30-35 rays while channel catfish have only 24-29 anal fin rays.

Unlike the single-chambered air bladder of the channel cat, the internal air bladder in the blue cat has a constriction in the middle giving it a two-chambered appearance

### Habitats and Habits

The blue catfish is a big river fish, living in the major rivers and their tributaries in the middle United States. The Mississippi, Missouri, Ohio, Tennessee, Alabama and Tombigbee rivers all contain populations of blue cats. Unfortunately, their numbers have been declining since 1900, especially in the Missouri and Mississippi rivers. Efforts to improve the rivers for navigation and flood control by the construction of dams, channelization and removal of snags and log piles have greatly damaged or removed much of the essential habitats required by blue catfish.

Blue catfish have somewhat different habitat needs from channel catfish. Blues, being big river fish, prefer areas with moderate to swift water current, while channel cats are more characteristic of areas with little to moderate current. The two species eat some of the same foodstuffs, but blue cats' diet is less diverse. Young blue catfish eat aquatic insects and small fish while larger blues consume crayfish, mussels and other fish.

Spawning and nesting behavior is similar for the two species. Spawning occurs in late spring. Male catfish commonly choose and clear a nest site usually in drift piles, logs, root systems or other dark, secluded areas near the bank. The female lays eggs on the bottom of the nest where the male then fertilizes them. The eggs hatch in about a week, and the male guards the fry in the nest until they swim away about a week later.

Blue catfish grow faster and live longer than channel catfish. Blue cats may grow to lengths of over 55 inches and may weigh more than 100 lbs. Maximum life span for blues is unknown, but is probably 20-25 years. Few channel cats reach 25 lbs. or live longer than 12-15 years. The state record channel catfish weighed 46 lbs.

### Angling Methods

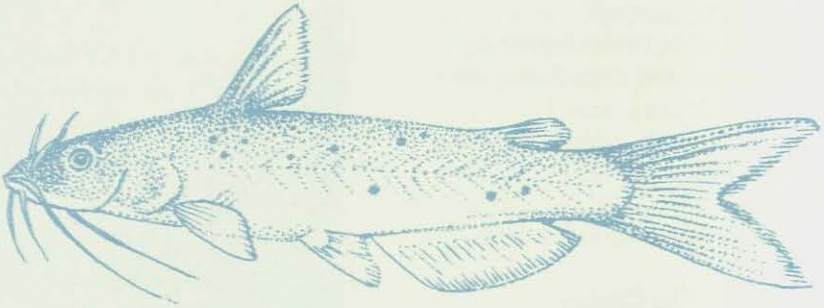
Blue catfish can be caught on rod and reel; however, using bush hooks or trotlines can increase your odds of landing a big fish. But remember, a fish must be caught by rod and reel to qualify as a state record. Obviously, the thrill of landing a huge catfish is much greater if you use rod and reel, but catching a big cat by one of the other methods is also exciting.

If you are after big fish, use heavy tackle. A hooked blue catfish will run for deep water or heavy cover or both, so you'll need appropriate gear to handle the load. A 7-foot rod and a stout reel equipped with 30- to 50-pound test line should work. Live bait is best. Use a large shiner or other baitfish or a large crayfish. Cut baits can also be effective. Blue catfish will sometimes suspend in mid-water, but most of the time they will remain near the bottom, so use sinkers heavy enough to get your bait down where the big fish are.

If you are fishing during the daytime, look for areas with dense cover and deep water. As night approaches, catfish will move to shallow areas in search of food and some will continue to feed actively throughout the night. Thus, nighttime fishing is usually more successful than daytime because the fish are more active and accessible.

Blue catfish have white, firm flesh that is very palatable. Your favorite fish recipe will work well. But if you don't plan to make a meal of your catch, take care to return it to the water unharmed.

*Ross Dames is a fisheries biologist at the Commission's Blackwater Fisheries Research and Development Center in Holt.*

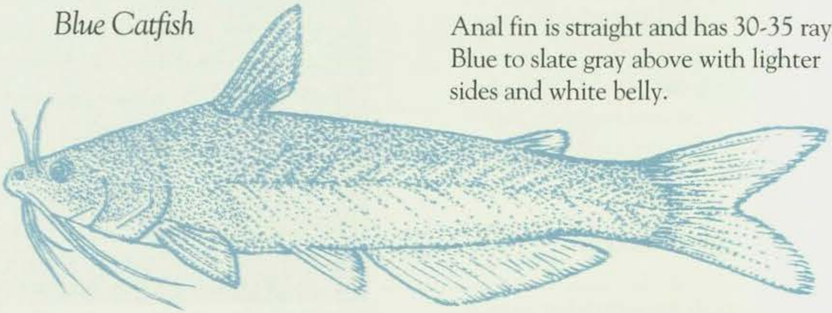


*Channel Catfish*

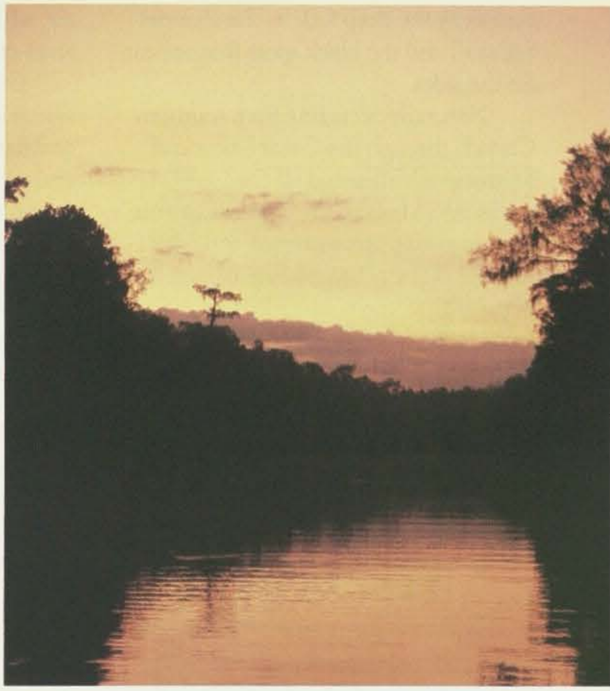
Anal fin is rounded and has 24-29 rays. Back blue-gray with light blue to silvery sides with a white belly and scattered dark olive to black spots.

*Blue Catfish*

Anal fin is straight and has 30-35 rays. Blue to slate gray above with lighter sides and white belly.



# Bush Hooking "Old Whiskers"



Text and Photographs by Lt. Dewey Weaver

As daybreak approached, our boat moved slowly up the Santa Fe River. This was our final trip to check the bush hooks we'd set the evening before. The boat moved around a curve, and we saw the tree limb bending and shaking with the pull of another catfish. The low-hanging limb bent into the water as I reached for the line to bring up a 4-pound channel catfish.

Bush hook fishing gets its name because the angler ties a line to a limber bush or tree limb overhanging the water. When a catfish bites, the limb's flexibility keeps the fish from breaking the line. The excitement of seeing a tree top shaking or a limb folding completely under the water's surface adds to the fun of bush hook fishing.

We were nearing the end of a long trip that had begun the previous afternoon. We'd spent most of the late evening hours preparing lines, baiting and selecting locations on the river. My fishing partner, Larry Johnson, and I had checked the lines hourly to remove fish and re-bait. This was our final run on a night that already had produced a cooler full of Santa Fe River catfish.

The Santa Fe is renowned in northeast Florida for excellent catfishing. This 70-mile waterway begins in Santa Fe Lake and continues westward to reach the Suwannee River near Branford. The tannin-stained river has many springs and during periods of low water is rather clear. But bush hook fishing works best during high-water periods.

Except in several river sections and lakes, bush hooks and trotlines are legal devices for taking catfish in Florida. A Florida freshwater sport fishing license allows fishermen to use a maximum of 25 hooks on trotlines, bush hooks or set lines. Legal baits include cut bait, commercial catfish bait and live bait, but live game fish or parts of game fish are prohibited.*

Choice of bait varies with the fisherman. Baits made from chicken blood or chicken livers are two favorites. Commercial fishermen use Ivory soap, chunks of freshwater eels, beef heart, beef liver, grass shrimp and other assorted baits.

Johnson chose fresh mullet cut into strips and attached to No. 1 stainless steel hooks. His favorite bait is live honey bees, but he doesn't use them often because they're expensive. He prefers the smaller hook because of the variety of catfish caught on the Santa Fe. The stainless steel ensures holding the largest catfish.

The length of line on the bush hook varies, depending on water depth. He always uses white nylon cord to attach the line to the limb, because the cord reflects a flashlight beam, making it much easier to locate sets in heavy cover. Johnson uses 12 inches of monofilament leader and attaches it with a swivel to the nylon line. He adds a lead weight to keep the bait just under the surface. This is especially important in rivers with swift current.

Johnson looks for likely-looking sites like drop-offs behind sandbars, or deep holes near overhanging trees. Since channel catfish prefer swiftly moving water over sand bars, gravel or bedrock, he sets most lines in these locations.

A law enforcement lieutenant for the Game and Fresh Water Fish Commission, Johnson learned bush hook fishing in his native state of Arkansas. He grew up fishing the Red, Ouachita and Mississippi rivers.

"The best river condition for bush hooks is rising water," Johnson said. "Fish leave the channel to feed on the newly submerged areas in the floodplain and are aggressive. They gorge themselves on small fish, earthworms and anything else they can find."

Johnson further advised bush hook fishermen to be certain to remove their lines at the end of a night's fishing. An abandoned line can be dangerous to wildlife and to other fishermen drifting down the river.

The channel catfish is the most abundant catfish in the river and a favorite with anglers because of its large size and excellent flavor. They are native to most rivers and larger streams and occur in a few lakes within the state. Channel catfish differ from white ▷

catfish by the deep fork in the channel cat's tail and the black spots that appear on the sides.

Naturally occurring from southern Canada through the Great Lakes and Mississippi Valley and all the Gulf states into Mexico, the channel catfish is an important recreational and commercial species. The fish has gained popularity to the point of being raised commercially for sale in grocery stores and restaurants.

Adult fish spend their day in deep holes, under logs or in some form of cover and move into shallow water at night to feed. Fishermen commonly set bush hooks at sundown and check lines at one- to two-hour intervals throughout the night.

We removed several more lines before another produced a chunky white catfish of about 2 pounds. Except for their preference for slower-moving water, white catfish inhabit comparable areas of the river as channel catfish.

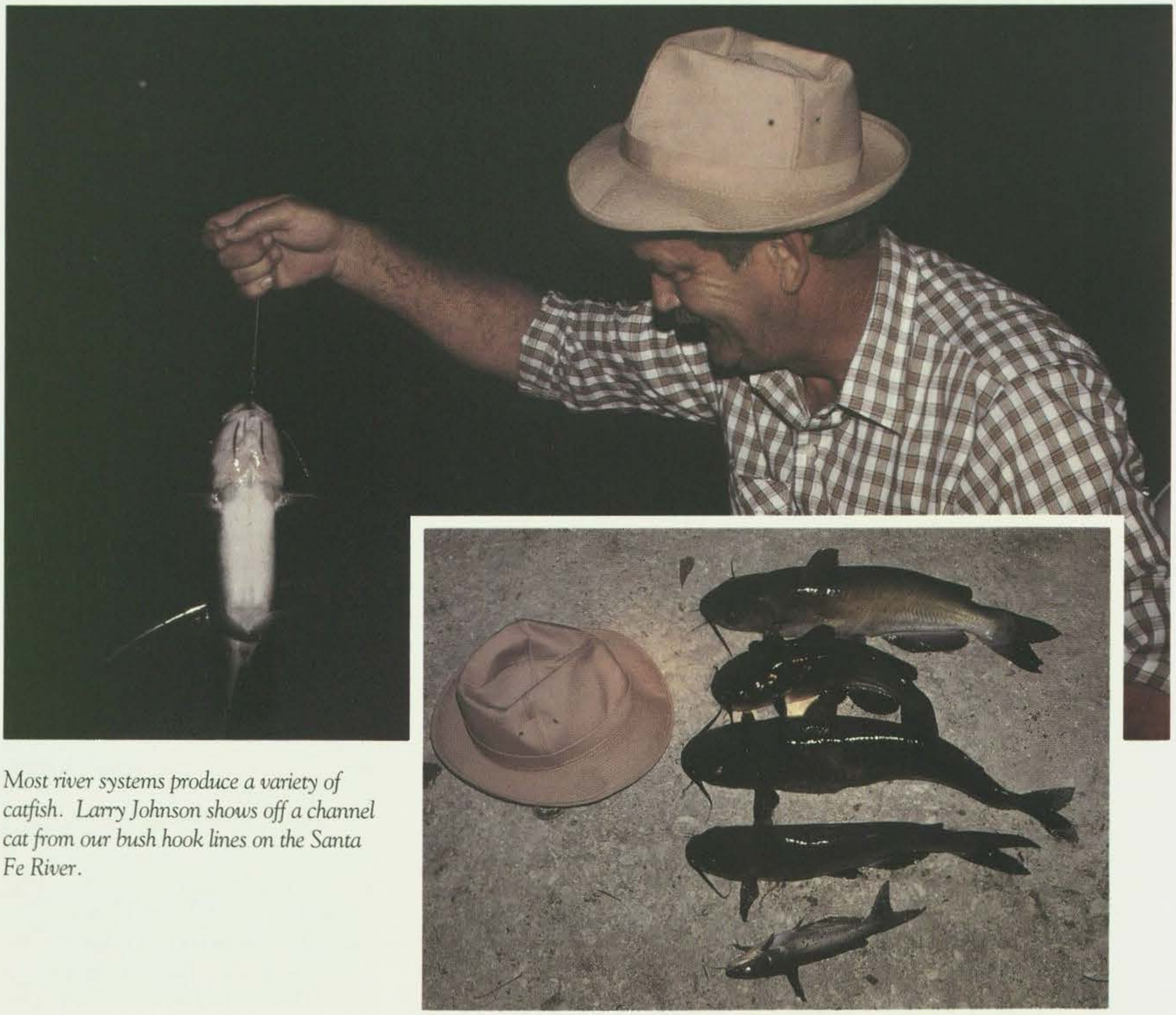
Other catfish found in the river systems of Florida include blue catfish and flathead catfish. Both are newcomers to Florida, with blue catfish first appearing after the floods in 1990. The blue inhabits the Escambia and Yellow rivers of the panhandle. Flatheads stocked into lakes on an experimental basis in the early 1970s grew at a rapid rate, but were hard to recover for scientific study. In recent years, the fish has migrated down the Flint and Chattahoochee rivers and now is abundant in the Apalachicola River. Both fish can reach weights over 50 pounds.

The flathead is a fish-eater and readily will take live shiners fished on set lines or rod and reel. They stay around underwater trees, pilings or dams and are very protective of their cover.

Pulling the last of our fishing lines, Larry and I talked about future trips. We plan to bring a Coleman stove and cook catfish on the bank with golden French fries and spicy hush puppies. River fishing has a way of making you dream of a return to the whiskers' domain and star-filled skies with owls calling in the hardwoods. This is bush hook fishing on the Santa Fe. ◆

*[**Editor's Note**: For more information about fishing with bush hooks, set lines or trotlines, including where the use of these devices is prohibited, consult the "Florida Commercial Freshwater Fisheries" brochure.]

*Lt. Dewey Weaver is the public information specialist in the Commission's Northeast Region.*



*Most river systems produce a variety of catfish. Larry Johnson shows off a channel cat from our bush hook lines on the Santa Fe River.*

# Designer Paul Brent

▷

Some artists are considered realists, others depict abstract impressions of the natural world. Paul Brent, a contemporary designer, expresses himself by successfully synthesizing elements of realism, expressionism and abstraction. Brent feels his work reinterprets the modern landscape.

The illustrator depicts striking "fragments" of Florida's environments for us to contemplate. He wants us to stop and think — to acknowledge that we have altered our once pristine lands and waters. Because of this modernization, many animals must struggle to coexist with humanity.

"Wildlife doesn't exist in a purely natural world anymore, now that we have so drastically changed our environment," Brent said. "I feel lucky to live in the more natural north Florida environment and I strongly feel we should preserve it," said the Panama City artist.

Brent hopes his graphics purchased for display in resort hotels will help visitors appreciate Florida's fish and wildlife.

The artist will often use softly rendered natural elements — especially animals — juxtaposed against hard-edged geometric planes of bold, graphic colors. These eclectic components create a spatial tension that urges us to discard our normal "learned" perception to view the environment a new way.

"When I first started out in pen and ink I became known as the 'Pelican Man' because that's all I drew," Brent said. Many ink drawings later, he developed his stylistic signature of free-flowing watercolors.

With sweeping strokes of a fine sable brush, Brent lays down thin watercolor washes that define transparent, earth-toned abstract shapes. Next he sketches the primary image onto stiff but absorbent watercolor paper. Fish are among his favorite subjects.

"Watercolor and fish just naturally go together," he explained. His considerable facility for illustrating them has been recognized internationally. The National Aquarium in Baltimore has commissioned Brent to illustrate a series of saltwater species, with a portion of the proceeds to benefit a marine conservation organization.

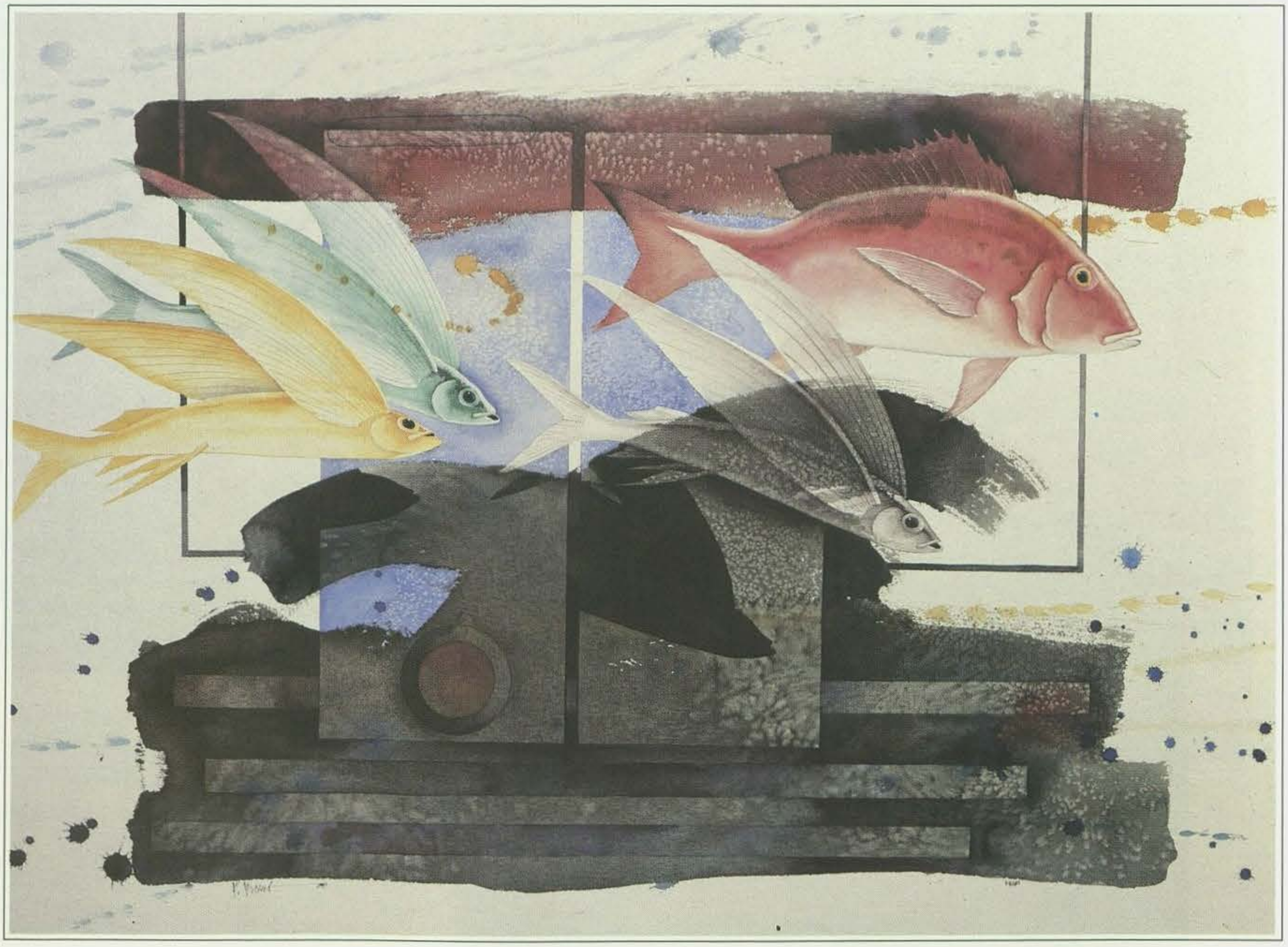
An architect by training, he studied illustration and printmaking while at California State University. He received degrees in architecture from the University of California at Berkeley before relocating to Florida. After a stint in the service, he married a native Floridian and feels at home in Panama City, where he had been stationed.

Brent now operates a design firm that markets over 100 fine art prints, textiles, wall coverings and packaging materials worldwide. His themes include wading birds, shells, sailboats, flowers, reptiles and amphibians, and numerous other images. He's currently painting a series of freshwater fish species and native and exotic treefrogs.

Elected into the membership of the National Watercolor Society, he is also a member of the Southern Watercolor Society and the Florida Arts Council.

Brent's montages are dynamic and thought-provoking. His artistic message is a powerful visual reminder that wildlife needs wild lands.

— Andrea H. Blount



*PELICAN IN FLIGHT*

*HERON BAY, one of a series of lithographs reproduced from a watercolor painting.*

# THE BELTED KINGFISHER

By Ann Morrow

WILLIAM J. WEBER

*Kingfishers look for clear, shallow water, a suitable perch and supply of small fish, usually less than 6 inches.*

Just a mile or two from downtown Tallahassee is a shallow, sandy-bottomed stream that meanders through a narrow band of woodland in a suburban neighborhood. The quiet of a winter day's walk there is sometimes broken by the rattling cry of a belted kingfisher moving from perch to perch along the stream in search of small fish.

Suburbia may seem an unlikely setting for such a sighting, but actually it is not unusual. Belted kingfishers frequent a wide variety of aquatic habitats throughout North America, ranging from lakes, ponds and coastal bays to mountain trout streams. Their strategy is simple: look for clear, shallow water, a suitable perch and a supply of small fish.

Once they spot their prey, the birds often hover, then take aim and dive, relying on gravity to drive home a spear-like, heavy bill. Kingfishers prefer smaller fish — usually less than 6 inches. They go after species of no economic value, except for occasional forays into hatcheries. Occasionally they supplement their diet with frogs, crayfish and insects. They regurgitate the indigestible portions (bones, scales, exoskeletons, etc.) in hard pellets, a habit common in owls, gulls and many other groups of birds.

Typically, belted kingfishers are solitary hunters, but rarely quiet ones. Their raucous, chattering cry is often described as a loud, dry rattle, primarily offered during flight. Such distinctive vocalization is common in the 87 species found worldwide in the kingfisher or *Alcedinidae* family, well-represented by such notable members as the "laughing" kookaburras of Australia.

The *Alcedinidae* are well-adapted for diving, and their large heads, heavy bills and short tails and legs give them a top-heavy silhouette, easily distinguishable from a distance. They have syndactyl feet (two toes fused), which assist the bill in the excavation of 3- to 6-foot-long nesting burrows in sandy banks near the water. The belted kingfisher lays five to eight eggs in a nest chamber lined with grass or leaves.

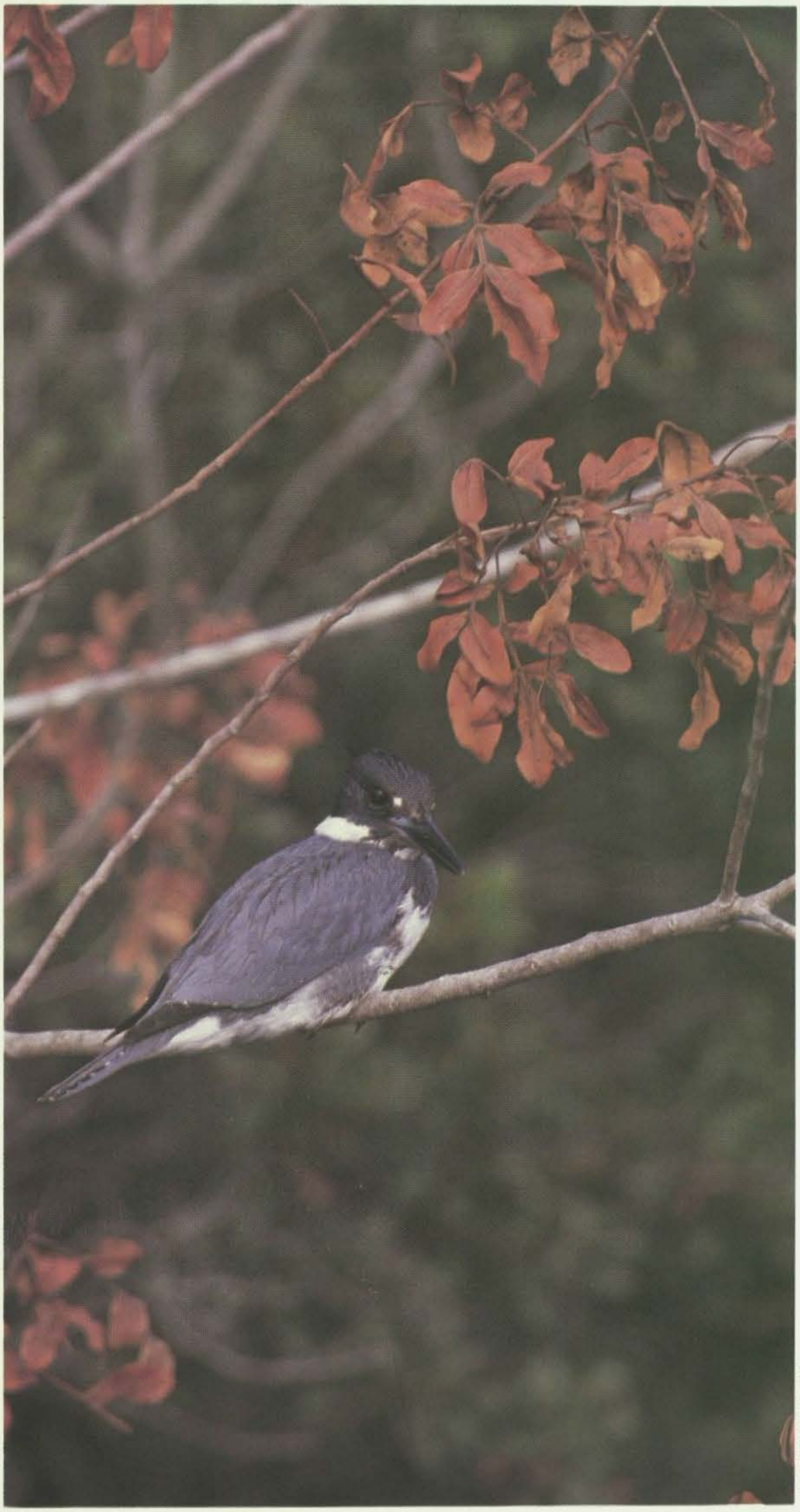
There are sporadic reports of kingfishers nesting in burrows or snags in Florida, but most breeding and nesting activity occurs farther north in a range that extends throughout Alaska and Canada. In the fall and winter there is a general southward migration to the southern United States and Central and South America. The birds are considered to be year-round residents in Florida, but are significantly more abundant during the winter.

Both male and female belted kingfishers are easily identified by their prominent crests and slate-blue plumage that extends in a band or "belt" (hence their name) across the white chest. The female has an additional rust-colored belly band.

The belted kingfisher is the only kingfisher found in the eastern United States. It is intermediate in size between two other North American species, the ringed and the green kingfishers, which are found in the Rio Grande valley in south Texas and Mexico.

The kingfisher is a visible and vocal part of the Florida landscape. The climate and rich diversity of aquatic habitats found here provide ample opportunity for viewing this expert fisher in action.

*Ann Morrow is a biologist and freelance writer specializing in natural history topics.*



WILLIAM J. WEBER

*Belted kingfishers are solitary hunters, but rarely quiet ones. They are the only kingfisher found in the eastern United States.*

# Where Have All The Waders Gone?

By Susan Cerulean

Where do old-timers go when traffic thickens and housing developments multiply in Miami and Fort Myers? And where can natives of Naples and Homestead flee when too many thousands stream southward in search of paradise?

Why, they move north to Ocala, of course. It's the south Florida refugee syndrome.

But what about wildlife populations? What can they do when the water runs dry and fish dinners disappear?

A study just released by the Florida Game and Fresh Water Fish Commission confirms that native wading birds — herons, egrets, ibises and spoonbills — like humans, are being flushed from south Florida haunts in ever-increasing numbers.

"Some are moving north," said survey coordinator Doug Runde, " some are just declining — catastrophically."

The major goals of the three-year survey were to locate all wading bird colonies, compile complete lists of species present and determine the current status of historic nesting colonies. The findings were published recently as the "Florida Atlas of Breeding Sites for Herons and Their Allies."

Florida supports a rich and diverse population of long-legged wading birds, second only to Louisiana in numbers. Colonial nesting birds surveyed in Florida included great blue herons, great egrets, snowy egrets, little blue herons, tricolored herons, reddish egrets, cattle egrets, white ibises, glossy ibises, roseate spoonbills, wood storks, brown pelicans, double-crested cormorants and anhingas.

"We learned a lot more about the statewide distribution of wading birds than we've ever known, and now have a good baseline to track these animals," Runde said.

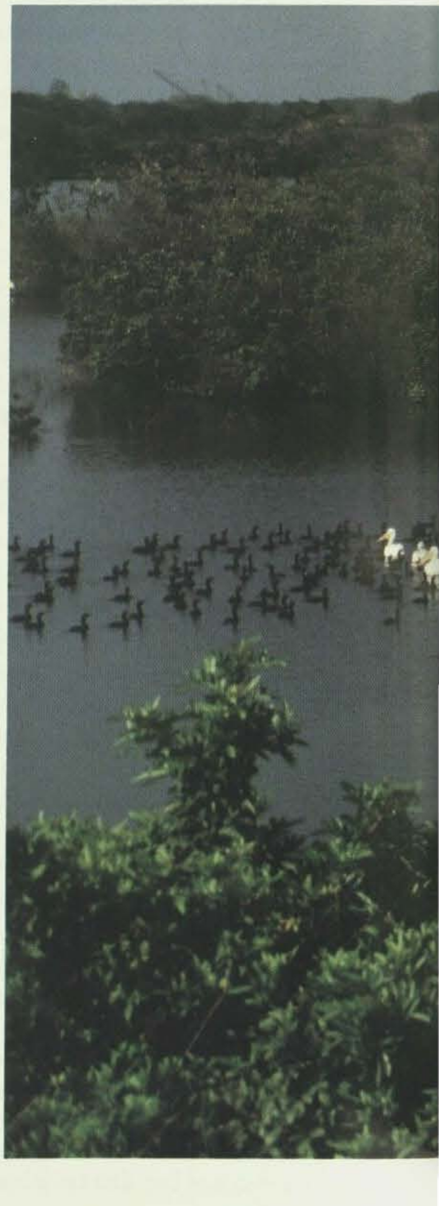
Along with an overall decline in numbers of wading birds, Runde and his co-workers were surprised by a fragmentation of many historically large wading bird colonies. Today there are far fewer large colonies (more than 1,000 nesting individuals), and many more small colonies (fewer than 100 birds) than there were 10 or 15 years ago.

Wading birds rely on wetland habitats for nesting and feeding sites. Nesting takes place in colonies that often contain nine or more species and anywhere from a few dozen to thousands of nests. Adults leave the colonies daily, flying as far as 20 miles away to forage and obtain food in marshes and swamps for their young. Most herons and egrets prefer small fish, frogs, insects, crayfish and freshwater shrimp.

Millions of wading birds are thought to have nested in Florida during the 1800s. Ornithologist Robert Porter Allen described Florida as the wading bird "reservoir" for all of North America — the source of birds for any population recoveries that might be necessary, especially in the eastern United States.

But by 1910, herons and egrets were virtually eliminated from large portions of their ranges, some nearly driven to extinction, by commercial hunters seeking the birds' graceful breeding plumes for the millinery trade. Eventually legal protection was extended to the birds, and their populations rebounded. [**Editor's note**: See "Reign of the Plume Hunters" beginning on page 2.]

A second acute decline in wading bird populations began early in the 20th century, directly correlated with wetland destruction and changes in water management practices. Forty percent (4 million acres) of important wading bird habitat, fresh- and saltwater marshlands, was destroyed between 1936 and 1987. And in south Florida, much of the remaining wetland habitat was severely altered by hundreds of miles of



canals and levees that disrupted the natural water cycles, and therefore food availability.

Since 1957, private organizations and government agencies have monitored Florida's waders, especially in south Florida. From 1976 to 1978, a cooperative survey conducted by the National and Florida Audubon societies, the U.S. Fish and Wildlife Service and the Commission inventoried peninsular Florida rookeries. But the newest Commission study is the largest, most systematic, and indeed the first, look at the state's wading bird populations as a whole.

"During the past 10 years, white ibises, snowy egrets, tricolored herons, wood storks and even cattle egrets are dramatically fewer in Florida," survey coordinator Runde said. "The fact that we located only about half the number of snowy egrets counted just 10 years ago is scary. Only four of the 14 species we surveyed seem to be holding their own."

Once Florida's most abundant wader, the white ibis now numbers so few that University of Florida wildlife adjunct professor Peter Frederick has petitioned the Commission to classify the bird as a threatened species.

"I believe there have been huge reductions in white ibis nesting throughout Florida, nearly a 50-percent reduction since 1975," Frederick wrote after examining the new survey data. "And remember, between 1940 and 1975, surveys conservatively estimated a 90-percent reduction in white ibis breeding attempts. It's a sad day when we must designate Florida's most numerous wading bird species as threatened."

According to the Commission study, the pattern of loss of breeding waders coincides with wetland habitat destruction in Florida. Not surprisingly, counties located in the highly altered Everglades system seem to have lost more species of breeding waders than other counties. Since the late 1970s, three species have ceased nesting in Dade and Highlands counties, and two species have deserted the rookeries of Okeechobee, Hendry and Collier counties.

A clear northward shift among nesting little blue herons, cattle egrets and double-crested cormorants was detected in the recent survey. And wading bird specialists have noticed the same trend among wood storks. ▷

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*The three-year survey revealed that native wading birds are declining, some catastrophically.*

"We've known that the south Florida population of wood storks has been in trouble for years, although it was historically very abundant in the Everglades," said Commission biologist Jim Rodgers. "The good news is that central and north Florida populations are stable and increasing. In fact, I suspect our northernmost colonies are spilling over into Georgia, and maybe even South Carolina."

Compared to the 1970s, there are now fewer large colonies and more small colonies in Florida. Just 10 years ago, more than one-fourth of all wading birds nested in large colonies. But the present survey revealed that nearly half of all wading bird colonies were home to fewer than 100 birds. And only three species (white ibis, cattle egret and brown pelican) occurred in large colonies more than 10 percent of the time.

The overall statewide pattern of fewer large colonies and more small colonies appears due largely to changes south of Tampa, probably reflecting the combination of extensive drainage and prolonged drought.

"This may be simply a successful adaptation by wading birds to harsh environmental conditions," Rodgers speculated. "It's more profitable for the birds to breed in smaller groups in widely scattered areas when food is scarce." But coupled with general population declines, colony fragmentation seems more ominous, Rodgers, Runde and Frederick agree.

What's so important about nesting in large groups or colonies? "There's a lot of controversy swirling around the advantages and disadvantages of nesting colonies," Rodgers admitted. "No one theory really works in all cases."

But wading birds do gain at least one advantage by nesting together: a known source of mates.

"As mating begins in a colony in response to subtle environmental cues, everybody gets worked up," Rodgers explained. "Hormones change and breeding for the whole group becomes synchronized." Presumably this allows the birds to take advantage of locally rich food sources at peak times, usually the late winter and spring.

And food seems to be the key to wading bird success in Florida.

"We now have a list of all nearly 1,000 wading bird colony locations or 'bedrooms' in Florida," Runde said. "And we believe most of those sites are relatively secure from human disturbance. But their 'kitchens' are what's really hurting. The loss of wetland feeding areas is driving not only the overall decline in numbers of birds, but their northward movement and the splintering of their nesting colonies."

Many studies have examined the relationship between nesting habitat and reproductive success among Florida wading birds. Researchers know that two factors related to prey are critical to a successful nesting season: relatively shallow water for foraging, and a continuously available, concentrated supply of fish. Historically, the waders' aquatic prey reproduced and grew in flooded wetlands throughout the rainy summer season. Then, during the dry winter and spring, waders gathered at isolated pools and slowly receding marsh edges to feed.

The construction of water levees has drastically changed wet-dry patterns and water depths in south Florida. The timing and location of fish concentrations have been altered, and many adult birds are unable to find enough food even to attempt nesting. North of the Everglades, nesting wading birds face similar problems as wetlands dry up or are degraded.

Today, south Florida water management is largely geared to suit the needs of the human population. Flood prevention and water storage for agriculture, industry and municipal consumption generally are considered more important to most humans than are the requirements of wading birds. Consequently, the conditions necessary for wading bird nesting rarely occur in the Everglades.

As natural wetlands are altered or replaced, wading birds are forced to feed and nest in artificial, highly disturbed water bodies, including phosphate pits, wastewater treatment ponds, roadside ditches, irrigation canals and agricultural fields. A recent study in Polk County showed that artificial sites, including active phosphate mines, can support large numbers of wading birds.

"We've got a situation where most

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wading birds in Florida can no longer find healthy, naturally functioning wetlands to nest in," said Brian Millsap, supervisor of the Commission's Nongame Wildlife Program. "The biggest colonies I'm aware of occur in highly disturbed, polluted situations with tremendous, but temporary, prey bases."

Biologist Naomi Edelson studied wading bird use of nutrient-enriched, highly altered wetlands in Polk County.

"I believe that artificial sites may temporarily support a declining population and mask our strong need to protect natural foraging habitats," Edelson concluded. Indeed, new studies show that nematodes and diseases concentrated in some artificial wetlands can seriously weaken local populations of wading birds.

So what can be done to bring the waders back? "First, we have to establish population objectives for species in trouble," Runde said. "Then we hope to come up with management plans for the 100 most important colonies, and use whatever tools we've got to secure those sites."

For example, the Commission's Office of Environmental Services is using Landsat mapping to identify foraging wetlands around important wading bird colonies. They'll recommend acquisition and active management of these sites to appropriate government and private organizations.

And survey results will complement more intensive, independent wading bird research around the state and hopefully stimulate more work on snowy and great egrets, tricolored and little blue herons and white ibises.

A full agenda? Perhaps. But Florida's exquisite, beleaguered wading birds deserve no less.

*Susan Cerulean is a biologist and a free-lance consultant who was formerly the section supervisor for the Commission's Nongame Wildlife Program.*

*(Photograph at left)*
*South Florida's wood storks have been in trouble for years, but the central and north Florida populations are stable and increasing.*

GFC

# Not A Glamorous Job

***WANTED**: Field assistants for the largest survey of herons, egrets, ibises and spoonbills ever conducted in the state. Lots of air travel guaranteed, plus close encounters with 15 species in fabulous breeding plumage!*

If the Commission had recruited survey workers with this ad, applicants surely would have expected exciting, perhaps glamorous, work.

"Flying this survey was hot, boring, noisy and terrifying," said veteran biologist Mark Robson. "And the ground work was a nightmare!"

The biologists initially located colonies during 183 coast-to-coast transect flights spaced three miles apart over the length of the state. When they located active colonies, they circled them at low altitudes to estimate size and species composition, and to record LORAN-C coordinates for later mapping.

Every regional nongame biologist working the transect flights has a horror story or two. For Brian Millsap, it was the time he flew over a colony nesting in a thick stand of willows in a Manatee County wetland. Three large pine trees, one with a vacant eagle nest, stood nearby. Millsap asked the pilot to circle the hard-to-see colony twice, then a third time. Eventually the biologist and his pilot got closer than they intended.

"The stall warning came on, and we looked up just in time to dodge the largest tree. I could have counted the pine cones in the eagle's nest bowl if I hadn't been so sure I was about to die!" Millsap remembered.

Airplane and helicopter pilots, mostly Commission employees, some contracted from the private sector, were crucial to the statewide survey.

"They got us through nearly 500 hours of tough flying, with lots of hazardous maneuvering at slow air speeds to get accurate counts," Millsap said. "Their safety record was perfect."

The ground work was equally challenging. Doug Runde remembered a search for a colony easily sighted by air:

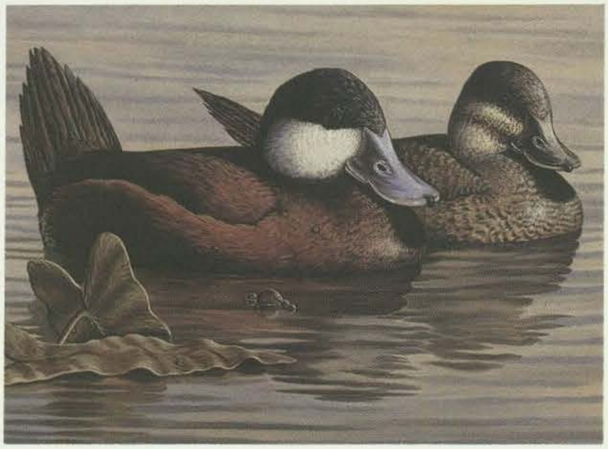
"We drove as close as we could, then hacked and crawled our way through a seemingly endless stretch of dense willow and titi," Runde said. "After two hours we reached the fringe of the rookery, tucked back in the deepest, most inaccessible water hole in the Osceola National Forest.

"We could tell we were close when we began to hear the bill clapping of courting wood storks, egrets squabbling over nest sticks and the food-begging cries of young of every species. Not to mention the reek of a thick nitrogenous 'soup,' dotted with rotting fish, under the nests!

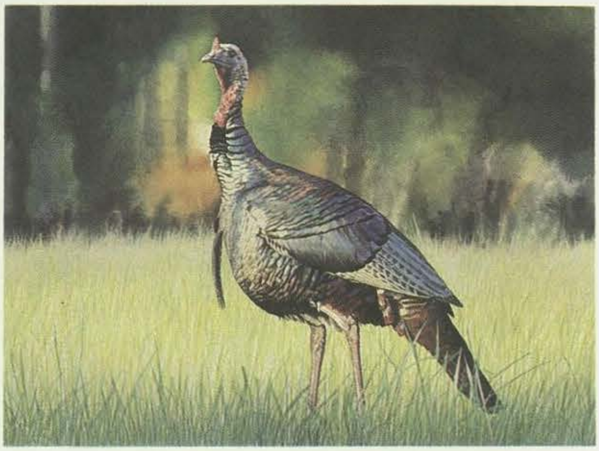
"Rookeries aren't a pleasant place to visit," Runde concluded, "but a lot of neat things are going on there."

# 1992-93

# Waterfowl and Turkey Stamp Contest Winners



**Ruddy Ducks by Richard Clifton**



**Bearded Turkey by Michael J. Harrell**

It's astounding the way some artists can take a paintbrush and recreate the intricate details and colors of wild turkeys and ducks the way they do in Florida's annual stamp contests. They have to, though, because only anatomically flawless and attractive paintings have a chance at winning, and there's never a shortage of remarkable paintings in the competition.

Richard Clifton of Milford, Del. submitted a painting of a male and a female ruddy duck to outclass 78 other contenders for top honors in the waterfowl competition. His design will appear on the 1992-93 waterfowl stamp that sells for $3 to duck hunters and stamp collectors. Waterfowl stamp sales generate about $45,000 per year to fund research and management programs for this state's wild ducks.

The Game and Fresh Water Fish Commission has conducted contests to select artwork for state waterfowl stamps each year since 1979. The turkey stamp competition began in 1986.

In the turkey stamp design competition, Michael J. Harrell of Tallahassee won from a pool of 28 entries. Another of his paintings finished third. Harrell's first-place entry, a lifelike painting of a bearded turkey standing in a grassy field, will appear on Florida's $5 turkey stamp in 1992-93. Turkey stamp sales topped $100,000 last year.

Although much of the money from stamp sales comes from hunters, other conservationists and stamp collectors also prize the stamps.

Winning artists usually profit from the sale of prints, T-shirts and the original artwork, but receive no prize money or other consideration from the Commission. Even so, some of this country's finest wildlife artists are eager to compete.

Each year in mid-May the Game and Fresh Water Fish Commission issues a news release and other promotional materials calling for entries. The image must be clear enough to be recognizable when reduced to stamp size — 1⅞ x 1⅜. Specific size requirements and rules are available in mid-June by contacting Tom Wright, Division of Wildlife, Game and Fresh Water Fish Commission, 620 S. Meridian St., Tallahassee, FL 32399-1600.

Persons interested in obtaining prints from the artists can contact them by writing to: Richard Clifton, RD-1, Box 226-F, Milford, DE 19963 or Michael J. Harrell, 2055 Thomasville Rd., Apt. A-203, Tallahassee, FL 32312. Clifton can be reached by phone at (302) 684-1043. Harrell's phone number is (904) 422-1682.

Sportsmen and collectors who are interested in obtaining 1992-93 stamps can get them from county tax collectors and their subagents beginning June 1. The 1991-92 stamps are available from county tax collectors and their subagents now. Stamps from 1990-91 are available from the Commission's Bureau of Accounting Services, 620 S. Meridian St., Tallahassee, FL 32399-1600. Earlier stamps are available only from private collectors and dealers. ◆

—Henry P. Cabbage

# Delicate Balance

## Species: Snowy Egret (*Egretta thula*)

## Florida Status: Species of Special Concern

Beginning birders delight in identifying a snowy egret — just one glance at its brilliant yellow feet gives it away. Contrasted against jet black legs, the bird's toes appear as if it had just stepped out of a shallow pan of sunshiny paint. The swirling, white feathers of this species, too, are among the most striking of all Florida's wading birds, especially during the breeding season.

But this transformation into gorgeous breeding plumage was historically lethal for snowy egrets. During the late 1800s, the lacy "aigrettes" of pre-nuptial snowys were highly prized in the millinery trade. Millions of birds were shot by commercial hunters to obtain the filamentous plumes that signaled courtship. Thus, the most poignant of the dozen or so common names attached to the snowy egret was coined: "bonnet martyr." Populations of snowy and great egrets were driven nearly to extinction until legal protection stopped the commercial hunting. Slowly, egrets repopulated many of their former wetland haunts.

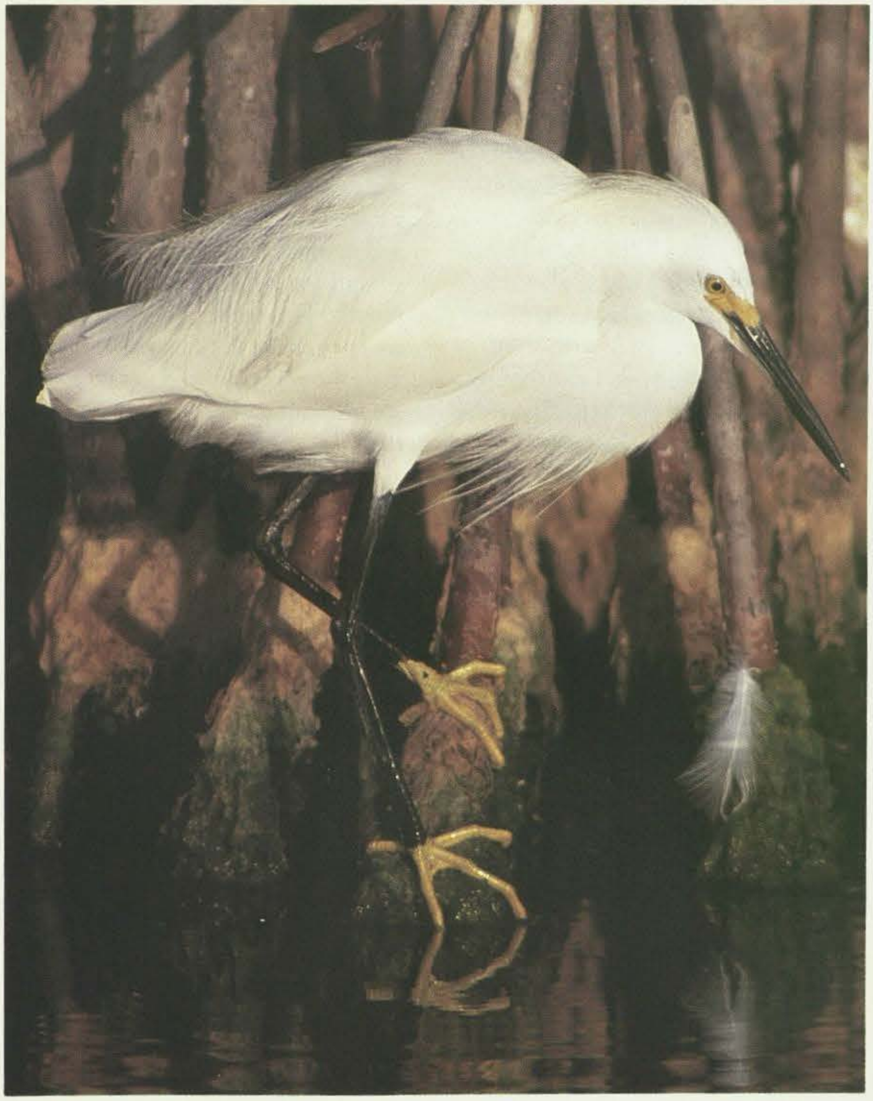
"Miami martyr" might become the bird's modern nickname, as the Gold Coast drains and degrades its former strongholds, the Everglades and adjoining coastal wetlands. Based on recent surveys, biologists believe that snowy egrets have declined dramatically during the last 10 years. Many fewer birds were counted during a 1986-88 statewide survey, and the vast majority nested in small colonies, rather than in historically large rookeries.

Snowy egrets nest in colonies with other species of long-legged wading birds. They breed throughout temperate North and South America and have been considered fairly common Florida residents. Open sandy beaches are favorite feeding and resting places, but snowys are equally at home in freshwater marshes and swamps. Occasionally, snowys join cattle egrets in upland fields to forage on insects disturbed by grazing livestock.

Snowys are visual hunters and must actively pursue the 200 or more small fish, insects, crustaceans and shrimp each bird consumes daily. The snowy egret uses its wings and remarkable feet to scare up aquatic prey, employing many of the foraging methods common to wading birds. The bird first shuffles its golden toes through mud, vegetation or murky water to startle fish from their hiding places. When hunting is slow, snowys may add wing movements to disturb prey species, and they sometimes capture small fish from the surface of deep water by foraging from the air. The bird also uses a unique underwater bill-vibrating technique to attract potential prey fish.

The snowy egret is a living symbol of the best of wild Florida, and its decline indicates how our stewardship of the state's resources has fallen short. The recovery of the snowy will be more difficult to attain than in the early 1900s — but no less important.

— Susan Cerulean



CHARLIE HEIDECKER

# Outsmarting Spring Gobblers

GLENN C. SMITH

By Aubrey Martin

Three trips to the turkey woods during the first week of the 1991 spring season were to no avail. The toms did not cooperate by gobbling as usual at the crack of dawn. Sometimes this happens when hunting season opens before a majority of hens have begun nesting. This is when the hunter must come up with a plan that will motivate the toms to venture away from their harems.

The following week, I returned to the same area I had previously hunted, but waited until about 9 a.m. to begin hunting. Knowing the gobblers were down from their roosts, I decided on a strategy of mobile calling. I would use my turkey caller as I walked along old roads and trails, or otherwise moved through the woods.

I began to call as soon as I entered an area where I had previously discovered gobbler tracks. Using alternate *clucks* and mating *yelps*, I tried to sound as enticing as possible.

*GI-OBBLE-OBBLE*! The gobbler's love call rang out. He sounded about 150 yards away, and he meant business. I had two options: set up where I was and try to woo the quarry to my location, or advance another 100 yards to be closer to the game. Sometimes this is risky; however, there seemed to be good cover between us. The closer the hunter approaches a gobbler, the more apt he is to score. I decided to go for it.

After moving 50 yards closer, I queried the old warrior with the mating *yelp* of a hen. Immediately, he gobbled, which let me know he was still 100 yards away. I slipped in another 50 yards and set up in a natural blind. The ground cover was thick with undergrowth. This meant I probably wouldn't see the gobbler until he was close. Likewise, the gobbler would not be able to see me until he was well within shotgun range.

After gobbling several more times, he became silent. Experience had taught me that these wise birds often stop calling and approach silently. A gobbler is usually a suspicious bird, but this one must have been completely duped. Ever so calmly, and sooner than I expected, the regal bird stepped into full view from behind a large oak about 15 yards away. Slowly, I brought the 12-gauge semi-automatic to my shoulder. When I squeezed the trigger, the prize was mine. I retrieved the fine bird at only 15 steps away. He weighed 18 pounds and had $1^1/_4$-inch spurs.

Mobile calling is also an excellent tactic for gobblers on the roost, especially when they are several hundred yards away. Many times gobblers will fly down before the hunter can approach close enough to set up for working the birds. When that happens, the gobbler sees the hunter and beats a hasty retreat to parts unknown. When the hunter hears a gobbler on the roost, however, and immediately begins to approach while calling every 50-100 yards, the gobbler will usually stay put. This allows the hunter to approach as close as 75 to 100 yards, then set up to lure the bird closer.

Calling wild turkeys is often frustrating to novice hunters. The most common questions I hear are: How often should the hunter call to a gobbler, which are the best calls to use, and what types of calling instruments are best?

How often the hunter calls depends upon the mood of the gobbler. Most hunters advise calling no more than once every 15 minutes. On my first spring gobbler hunt, I responded to a *gobble* with a three-note hen *yelp* and prepared to wait 15 minutes. But the wary bird was not familiar with this rule. To my surprise and defeat, the gobbler came well within gun range in about five minutes. My gun was lying across my lap, and before I could raise it, the gobbler was gone.

When a gobbler is sounding off regularly and often, the hunter would do well not to answer every call; he should call every five or 10 minutes. If the cover is good, approach to within 100 yards of the game. I always approach to 75 yards in such cases and sometimes as close as 50 yards. The closer the hunter is to the gobbler, the more apt the game is to come, and come quickly. Sometimes a turkey will strut or gobble, but will "hang up" and not come any closer. When the bird stalls, try a different tactic. I usually yelp to such a bird, and when he answers I yelp right over his call. When this doesn't work, I will cackle (double-time yelp) right over his *gobble*. This usually does the trick.

The best calls to start with in working a gobbler are the *cluck* and *yelp*. Probably more gobblers have been taken with these two calls than any other. However, when an old call-shy warrior hangs up, it's good to appeal to his curiosity. For instance, I once worked an old gobbler for about an hour. He was interested, but because of an expanse of open woods between us, the gobbler hung up. To show his passion, he double-gobbled and triple-gobbled. One time he gobbled five times in rapid succession. He walked 25 yards to his right flank and gobbled, then 25 yards to his left and gobbled again. Finally, the tom slowed his calling to about every five or 10 minutes, and I would answer at the same rate. When the big bird became quiet, I thought the game was up, but to my surprise, the old sultan quietly slipped up within 30 yards of my blind. After 1½ hours of competition, suspense and waiting, I took the bird.

Basically, there are only two types of turkey calling instruments on the market: friction callers and mouth-blown callers. Usually, the hand-held friction caller, especially the 6- to 8-inch wooden box with wooden striking handle, is easier to learn. Also, the flat slate surface calls with wooden strikers are not difficult to use.

The small, horseshoe-shaped aluminum-with-latex diaphragm, which fits inside the mouth, is considered by professionals to be most effective and convenient. You may hold this call in your mouth, leaving your hands free to use your gun with minimum movement. Gobblers are usually suspicious of any movement they see but cannot identify. Many hunters, however, find it difficult and time-consuming to master the mouth diaphragm and are successful enough with nothing more than boxes and slates.

Advanced hunters may want to consider callers that are capable of imitating the actual *gobble* of male turkeys. Using this type caller, I have had good success with stubborn, old toms.

[**Editor's note**: Hunters should exercise extreme caution when imitating the *gobble* of a turkey, especially in areas of high hunter density. Several fatal accidents have occurred when hunters heard a *gobble* and fired without being sure of their target.]

I have used the caller successfully at Camp Blanding Wildlife Management Area. On one hunt, a gobbler had hung up after I had worked him for 45 minutes. He was about 100 yards away and wouldn't budge. None of the hen talk I used had been effective, so I decided to use the *gobble* trick. After sending the tom a seductive hen *yelp*, I quickly followed up with the *gobble* of a competing tom. Immediately, the stalling gobbler came sprinting into gun range looking for a fight with a suspected rival. I collected this bird with an easy shot.

The wild turkey population is flourishing in Florida and across the nation. Recent reports from the National Wild Turkey Federation indicate an estimated population of 4,000,000 birds in the United States, an excellent increase from previous years. Florida's wild turkey population has remained stable at about 100,000. The Florida Game and Fresh Water Fish Commission and National Wild Turkey Federation are primarily responsible for this overwhelming success.

"Watch out Fred, here comes another one."

**Hunters interested in joining the Wild Turkey Federation can contact the organization at P.O. Box 530, Edgefield, SC 29824-0530.**

*Aubrey Martin is a retired minister who loves to go turkey hunting and write about it.*

# 1992 FLORIDA WILDLIFE Photo Contest

1. Only original 35 mm slides and $2\frac{1}{4}$" x $2\frac{1}{4}$" color transparencies are eligible. Composite slides are not eligible. DO NOT SEND PRINTS, NEGATIVES OR DUPLICATE SLIDES. Print your name on the slide mount for each entry.

2. Enter in as many categories as you like — up to three entries per category.

Category A — WILD BIRDS
Category B — WILD MAMMALS
Category C — WILD ANIMALS other than birds and mammals, including reptiles, amphibians, insects
Category D — FLORIDA'S NATURAL ENVIRONMENT (the only category that may show people or man-made objects)

3. Fill out an entry form for each category in which you compete. Photocopied forms are acceptable if signatures are original. Be sure to circle the appropriate category letter for your entry. If people appear in your Category D entry, you must submit a signed model release form.

4. Entries must be accompanied by a self-addressed, stamped envelope for each category. Be sure to attach sufficient first-class postage (do not send money). Entries will be returned after winners are published in the September-October and November-December issues.

5. Each slide entry must be attached to a 3" x 5" card with the photographer's name, mailing address, telephone number and Social Security number printed or typewritten on the card.

6. ONLY SLIDES TAKEN IN FLORIDA ARE ELIGIBLE. Captive, domestic and exotic species are not eligible. Employees of the Florida Game and Fresh Water Fish Commission are not eligible. Only photographs that have never been published in a magazine are eligible.

7. Entries must be mailed to FLORIDA WILDLIFE PHOTO CONTEST, 620 South Meridian Street, Tallahassee, Florida 32399-1600 and must be received by June 29, 1992.

8. Any entry not meeting all the rules will be ineligible. Decisions of the judges will be final. Cash honorariums will be awarded upon publication.

All entries will be handled carefully; however, the Florida Game and Fresh Water Fish Commission cannot be held responsible for lost or damaged materials. Entries may be used in future promotions.

## Official Entry Form

CATEGORY (Circle one): A B C D

Photograph No. 1 was taken in ____________ County
and is of ______________________________
Photograph No. 2 was taken in ____________ County
and is of ______________________________
Photograph No. 3 was taken in ____________ County
and is of ______________________________

No. of Entries: _____

Photographer: ______________________________
Mailing Address: ______________________________
City: ______________ State: ________ ZIP: ___________
Daytime Phone: (     ) ______________________________

I certify that I am the photographer and owner of these entries (photographs) and that all entries were taken in Florida, and I hereby give the Florida Game and Fresh Water Fish Commission my permission to publish my entries in FLORIDA WILDLIFE in accordance with the contest rules.

Signed (Entrant): ______________________________
Social Security Number: _______________

## Category D Model Release

I, ______________________(model's name), for good and valuable consideration, do hereby give ________________ ____________________(photographer's name) and FLORIDA WILDLIFE, an informational and educational magazine published by the Florida Game and Fresh Water Fish Commission, an irrevocable right to use my name (and any fictional name) and photograph for publication in FLORIDA WILDLIFE. I have read this release and fully understand its contents. I affirm that I am 18 years of age or older.

Signed: ______________________________

### Guardian's Consent for Minor Models

I am the parent or legal guardian of the above-named minor and hereby approve the Model Release and consent to the use of said minor's name and photograph as aforesaid. I affirm that I have the legal right to issue such consent.

Signed: ______________________________

# Ask Your Biologist

**Dear Fisheries Biologist:**

**I recently called a local Florida Game and Fresh Water Fish Commission office to ask about having our lake stocked with bass. I was told your agency does not routinely stock bass in private ponds and that the money our homeowners have collected for this project would be better spent to improve lake conditions. How come?**

**A Confused Fishermen**

Dear Confused:

Yours is a question frequently asked, especially by newcomers to Florida from states where stocking is a common practice.

Florida's unique subtropical climate with mild winters allows for a year-round growing season. Aquatic productivity is relatively high, and as a result, most native fish populations do not require stock replenishment. Largemouth bass will reproduce successfully here as long as there is suitable habitat and water quality.

When bass spawn during late winter and early spring, tens of thousands of eggs are deposited in each nest. Magnified by the number of spawning pairs, the number of bass eggs produced each year is tremendous. Of course, not all eggs hatch, and of the thousands that do, few survive to become adults. The survival rate of young bass is controlled by natural mortality and predation losses, since existing habitat will support only a limited number. Yet, bass population density will remain stable if only two progeny survive long enough to compensate for the eventual mortality of their parents.

The number of adult bass present in a lake is controlled by the "carrying capacity," or the maximum total weight of fish per acre of water. Unless the habitat or water quality are altered, this carrying capacity usually cannot be raised without sacrificing the conditions and health of the fishery. Harvest, however, can keep the population below capacity. This is analogous to a pasture that can support only a limited number of healthy cattle. If the carrying capacity is exceeded, competition for available food will result in underfed animals and increased parasite and disease problems.

Numerous efforts to stock bass into existing healthy populations in Florida and throughout the Southeast failed to increase the number of bass. Bass produced in our hatcheries for stocking efforts are small, usually less than 2 inches. But, stocking fingerlings this size into wild fish populations results in heavy predation by resident fishes. Although survival rates could be enhanced by stocking 6-inch fingerlings, these larger bass are much more costly and difficult to produce.

There are some situations, however, that could benefit from bass stocking. These include newly constructed lakes and areas where bass populations have been suppressed by poor habitat or environmental problems. Stocking bass and panfish in man-made lakes is a common practice that typically produces positive results. Predation and competition are minimal, so subsequent survival and growth rates are usually good. After several years, if the water is not over-fished, natural reproduction sustains the fishery.

Also, bass stocking may be justified in stressed environments where bass reproduction has been poor. But unless water quality improves, these good results may be short-lived, even when fish are stocked.

Quality habitat is the key to productive bass fisheries. If proper conditions exist, and harvest is not excessive, naturally reproducing bass populations should perpetuate themselves.

Phil Chapman
Division of Fisheries

GFC

# It's The Law

By Inspector Kyle W. Hill

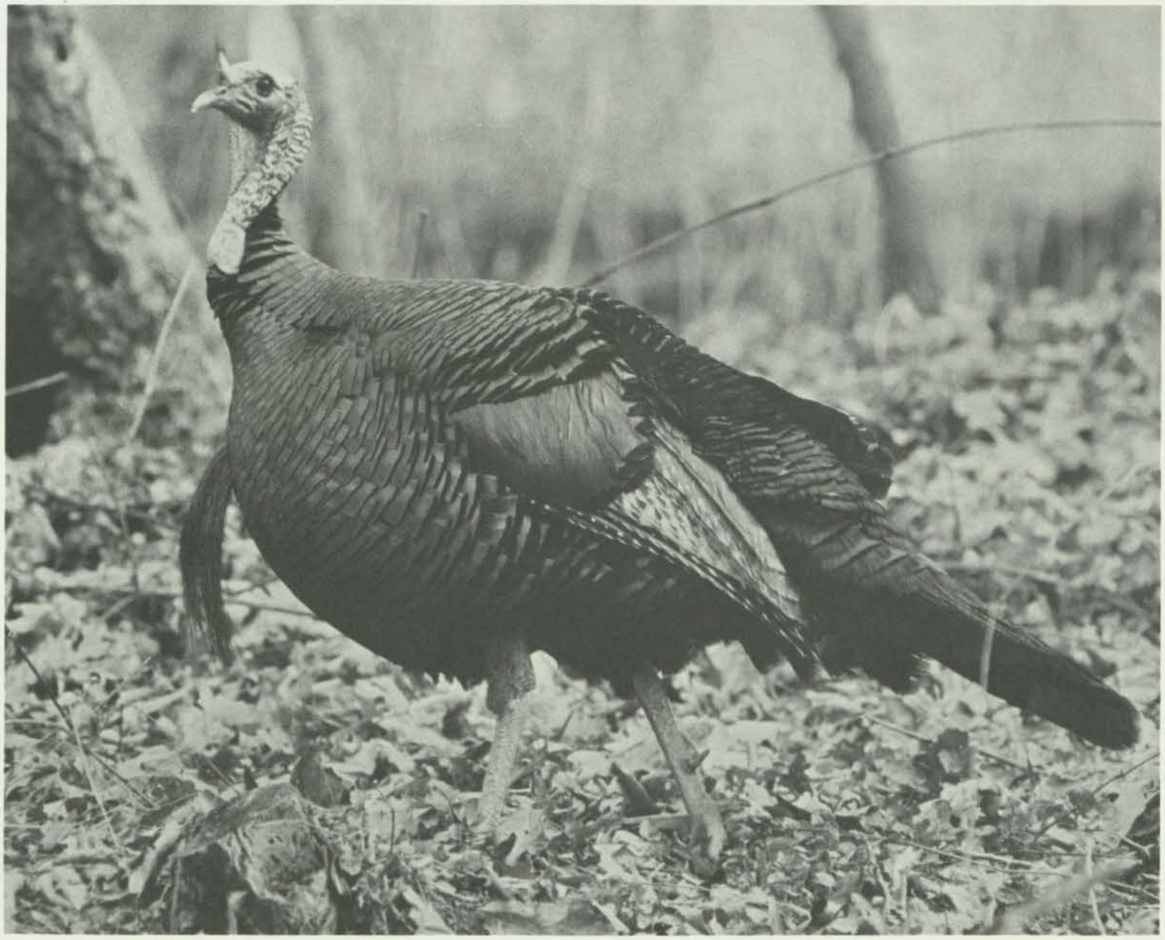
**Question: Am I required to wear blaze orange while hunting turkeys?**

Answer: No, turkey hunters are not required to wear hunter orange, but it is advisable because serious turkey hunting accidents occur every year. In many instances, hunters shoot another member of their party. Typically, the hunting partners separate but inadvertently circle one another. If they both move to intercept what they think is a gobbling bird, they may fail to identify their target correctly and accidentally "brush shoot" their partner. Refer to the Hunter Education column on page 45 to learn how to avoid these tragic circumstances.

**Question: Is it legal to shoot a turkey that is in a tree?**

Answer: No and yes. In Florida it is illegal to take any turkey while it is on the roost. This rule is necessary to prevent the taking of hen turkeys that frequently roost around a gobbler. Also, poor light conditions mean poor sighting conditions, which can result in a wounded turkey rather than a clean kill.

For law enforcement purposes, a turkey is considered "on the roost" when it is in a tree from one-half hour before sunset *until one-half hour after sunrise*. The law does not prohibit taking turkeys from trees at other times. ◆



LEONARD LEE RUE III

By Captain Ed Tyer

## Turkey Hunting Safety

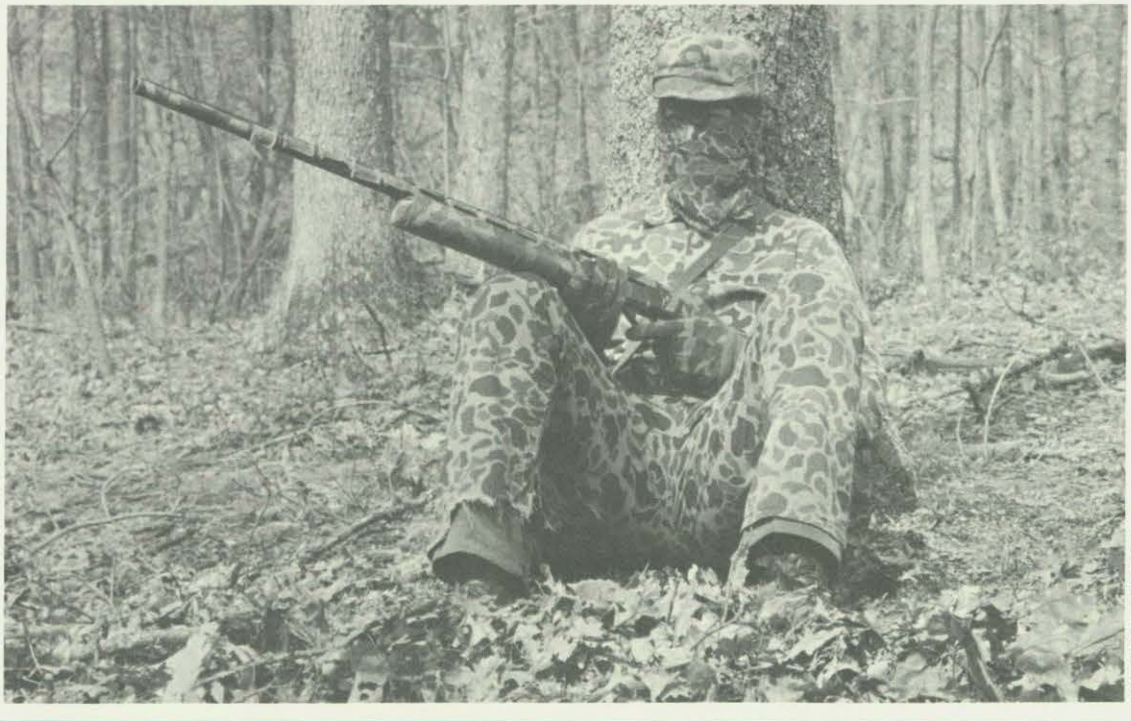
Quite often we hear hunters (and also nonhunters) discussing the relative safety of different types of hunting. Sooner or later, someone will remark that turkey hunting is more dangerous than any other type of hunting. And why not? Any type of hunting that requires you to hide in the bushes, camouflage yourself and make animal sounds seems dangerous. To see how safe turkey hunting is in comparison to other types of hunting, we evaluated turkey hunting accident statistics for 1983-1991.

Here's what we learned:

- **Turkey hunting accounted for about 10 percent of all firearm-related hunting accidents**. We recorded 32 turkey hunting accidents during this period (19 during spring season, 13 during fall). The majority of firearm-related hunting accidents occur when hunters are after deer.
- **The worst season for turkey hunting accidents was 1987-88**. Ten accidents occurred that year. The average for the other years was between three and four.
- **Rifles were involved in only three of the accidents**. In each case, the victim was less than 100 yards from the shooter.
- **Nineteen of the victims were shot by another member of their hunting party.** Only one of 32 turkey hunting accidents was self-inflicted, compared to one in three for all types of hunting accidents combined.
- **In 20 of the 32 accidents, the shooter mistook the victim for game, either by sight or by sound.** In eight other cases, the victim was either in the line of fire or out of sight of the shooter. One hunter was shot while carrying a turkey out of the woods. Three hunters were injured by unintentional discharges.
- **Eight of the accidents resulted in fatalities**. Six occurred during the fall season, and two (one of which was self-inflicted) occurred during the spring season.

Compared to other types of hunting, turkey hunting is not as dangerous as some would think. Still, there are several ways to make turkey hunting even safer.

- Make yourself identifiable by other hunters. Even though it's not required by law, wear a blaze orange vest (see "It's the Law," page 44). If you don't want to wear the vest while in the blind, attach it, or a wide strip of blaze orange material, to a nearby tree. You can use it to wrap around the game you carry to your vehicle.
- Never allow a young hunter (under 16) or an inexperienced turkey hunter to hunt alone. Keep them with you. One can call, and the other can shoot.
- Before you and your partner split up, decide on the direction where each will hunt and agree to meet only at a predetermined time. Use a compass to help you do this.
- Positively identify your target as legal game before you shoot. Anyone who fires at a movement in the woods that "sounds" like a turkey is risking a deadly accident.


LEONARD LEE RUE III

# Conservation Update

Compiled by Scott Ball

## COMMISSIONER RECEIVES HONORARY DEGREE

Mrs. Gilbert W. Humphrey, a member of the Game and Fresh Water Fish Commission for eight years, recently received the Honorary Doctor of Humane Letters Degree from Florida State University.

University President Dale Lick conferred the degree upon Mrs. Humphrey in recognition of her longtime patronage of the university's schools of music and theater. Her support of the fine arts also includes a term as President of the Metropolitan Opera Association in New York City from 1986-91.

Mrs. Humphrey has served on the Commission since 1984 and was its chairman in 1991.

## WADING BIRD ATLAS AVAILABLE TO PUBLIC

The findings of a three-year, statewide survey of wading bird populations, conducted by the Commission's Nongame Wildlife Program, have been published and now are available to the public.

The "Florida Atlas of Breeding Sites for Herons and Their Allies" suggests an overall decline in numbers of most species of herons, egrets, ibises and wood storks (see story beginning on page 34).

Copies are available for an $11 donation. Interested persons should contact the Commission's Nongame Wildlife Program at 620 S. Meridian St., Tallahassee, FL 32399-1600 for an order form. Return the form with a check made payable to the Nongame Wildlife Trust Fund.

## 1991 A GOOD/BAD YEAR FOR MANATEES

Manatee mortality figures for 1991 reveal a mixture of good and bad news for the gentle marine mammal.

The good news is that fewer manatees died last year than in 1990. Figures released by the Department of Natural Resources' Marine Research Institute account for 174 manatee deaths in 1991, compared to 206 the previous year. The primary factor for the reduction was a milder winter. Only one manatee died from cold stress last year; in 1990 cold weather killed 47. Also, the number of other natural causes of death declined from 20 in 1990 to 13 in 1991.

The bad news is that more manatees died from human-related causes last year than in the year before. Overall, watercraft killed 53 manatees in 1991, either by propeller cuts, impact or both — six more than the previous year. Flood gates or canal locks killed nine manatees in 1991, but only three the year before. Other human-related manatee deaths increased from four in 1990 to six the following year.

The manatee, Florida's official marine mammal, is an endangered species. Their current population is estimated to be 1,200.

## THOSE PESKY SQUIRRELS

Much to their frustration, some homeowners are feeding more birdseed to squirrels than to birds. To add insult to injury, some squirrels want to make your home their home.

Dr. Joseph Schaefer at the Institute of Food and Agricultural Sciences at the University of Florida said that squirrels are the cause of numerous complaints to his office.

"One of the complaints we get is about squirrels nesting in the attic," Schaefer said. "I even had a case one time of squirrels building a nest in the engine compartment of a van. The people would come home, and the mother squirrel would jump up to feed the babies."

Anyone with a bird feeder probably can testify to the resourcefulness of a squirrel hungry for birdseed. It helps to hang feeders from wire, Schaefer said, and if you cover the wire with loose PVC pipe, the squirrels usually fall off when the pipe turns.

Numerous hardware, nursery and other stores sell "squirrel-proof" bird feeders. But let the buyer beware; some models work better than others.

### COMMISSION MAKES FIRST PRESERVATION 2000 PURCHASE

Using funding from the Preservation 2000 Act, the Commission has purchased a 1,032-acre parcel of land in north Florida.

The Commission bought the land, adjacent to Joe Budd Wildlife Management Area (WMA) in Gadsden County, from the Trust for Public Land.

The property is broken into several tracts along the Ochlockonee River and Lake Talquin and provides good wildlife habitat. Purchase of the property enables the Commission to open more of the Joe Budd area to the public. Before the purchase, boundaries between the WMA and the private land were not marked in some areas. The Commission had to close parts of Joe Budd to prevent hunters from inadvertently trespassing.

The 1990 Florida Legislature passed the Preservation 2000 Act to provide funds for land acquisition through bond sales. For fiscal year 1990-91, the Commission received approximately $8.7 million for land purchases.

The Trust for Public Land, which purchased the tract from the E.M. Davis Family Trust, is a national nonprofit organization that works to help public agencies obtain property for public use.

### DINOSAUR “ROOKERIES”

A scientist studying alligator reproduction has uncovered evidence that may prove that dinosaurs were nurturing and protective mothers.

While studying why many alligators die before their eggs are laid, University of Florida zoologist Louis Guillette noticed that a gator’s uterus is structured like a bird’s. The link to prehistory comes from the theory that alligators, birds and dinosaurs share a common ancestor that looked like a crocodile and came ashore to lay eggs.

Guillette believes that some dinosaur mothers may have nested in groups similar to rookeries or sea bird colonies.

“Recent excavations of dinosaur eggs in Montana suggest that dinosaurs, like alligators, stayed close to the nest and defended their babies from predators,” Guillette said.

In studying alligators, Guillette and zoologist Brent Palmer of Ohio University discovered that a gator’s uterus, like that of a bird, has two sections. One part makes fibers for the egg shell, and the other produces calcium to harden it. This is a similarity the two creatures share with their ancient kin, the dinosaur.

All three descended from a group of reptiles called archosaurs.

### 1991 WILDFIRES FEWEST IN 20 YEARS

Thanks mainly to the weather, the number of wildfires in Florida reached a 20-year low in 1991.

“Mother Nature played a key role in keeping down fires last year,” said Florida Agriculture Commissioner Bob Crawford. He said that heavy rains and low winds during the first eight months of the year helped limit both the number of wildfires and total acreage burned.

In 1991, 3,985 wildfires burned 85,948 acres of Florida forests and wildlands. Arson accounted for 1,182 fires, while lightning caused 422.

The worst year on record for wildfires was 1981, when more than 14,000 wildfires burned over 500,000 acres of land.

"Which one is the lure?"

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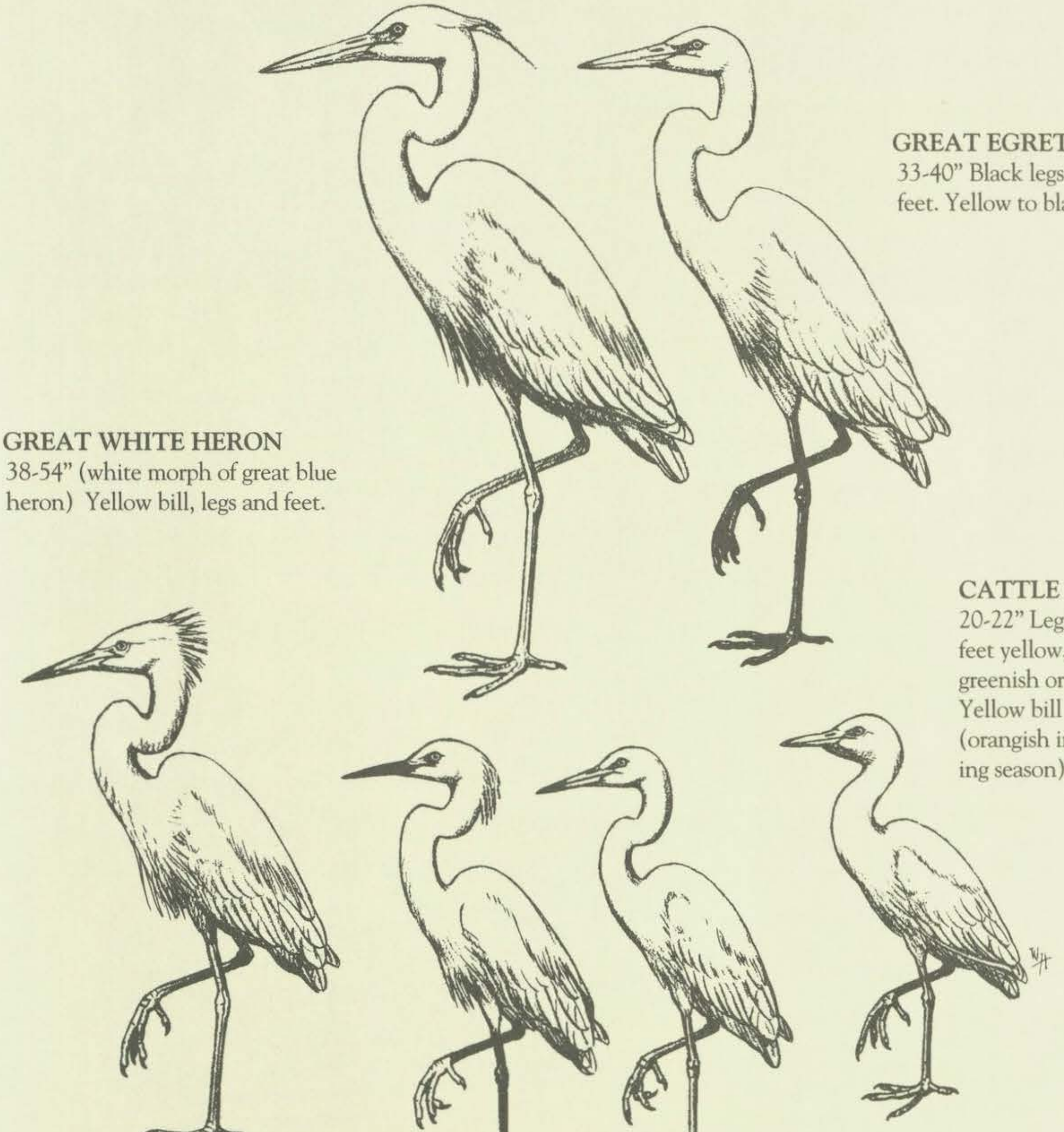
## IDENTIFYING "WHITE" HERONS



**GREAT EGRET**
33-40" Black legs and feet. Yellow to black bill.

**GREAT WHITE HERON**
38-54" (white morph of great blue heron) Yellow bill, legs and feet.

**CATTLE EGRET**
20-22" Legs and feet yellow, pinkish greenish or black. Yellow bill (orangish in breeding season).

**REDDISH EGRET**
(white phase) 27-32" Flesh-colored bill with black tip. Bluish legs and feet.

**SNOWY EGRET**
22-26" Black bill and legs (yellow stripe up back of leg on immature). Yellow feet.

**LITTLE BLUE HERON**
25-29" Bluish bill tipped with black. Dark greenish legs and feet. The immature are entirely white.

Illustration by
Wallace Hughes